

THE IRON AGE

THURSDAY, MAY 14, 1891.

The Woodbury Automatic High-Speed Engine.

The Woodbury high-speed steam engine is the invention of Daniel A. Woodbury of Rochester, N. Y., one of the pioneers in the field of steam-engine building.

The engine has been before the public for about five years, and its introduction upon the market was preceded by a long-continued series of experiments, extend-

which is supported against steam pressure at top and bottom by a forked or double wedge, C, whose length is about equal to that of the relief plate. It is obvious that a longitudinal movement of the wedges inward will force the relief plate away from valve, and the outward movement of wedges will let it down toward valve. The movement of the wedges and the consequent adjustment of relief plate is accomplished by the two adjusting screws *ll'*, which fit loosely through cross piece of wedge and are tapped into relief plate. The collars of the adjusting screws are notched on their peripheries. The collar

at right angles with the face, or, in other words, it is let down equally at all points, and this without guesswork and without any refitting after the engine leaves the works. The adjustment is made on the inside of the steam chest, and no meddlesome person can tamper with it from the outside. The passage *k* at the bottom of the chest allows a circulation of steam under the ledge, insuring equal temperatures for the ledges *i i'*.

The screw D, which is operated from the outside by the handle E, is also used as a means of moving the wedges inward and throwing off the relief plate for a pur-

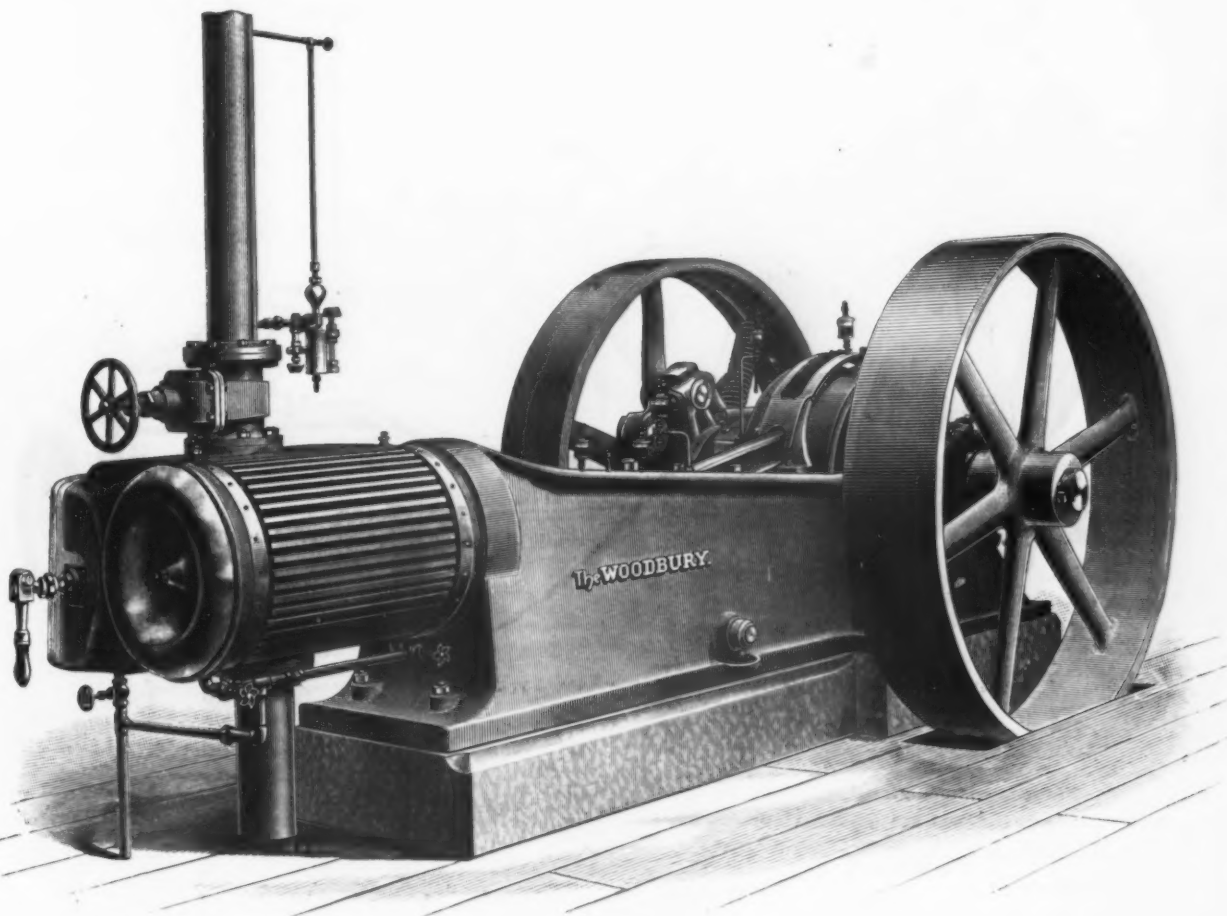


Fig. 1.

AUTOMATIC CUT-OFF HIGH-SPEED STEAM ENGINE.

ing over a period of 18 months. It is now being manufactured by the Stearns Mfg. Company, of Erie, Pa.

The details of construction are in the following description presented more fully than is customary:

Referring to the cuts, Figs. 1 and 2 show the two sides of the engine. In the detail views, Fig. 3 is a horizontal section through the cylinder and valve; Fig. 4 a vertical section through the same; Fig. 5 a horizontal section through steam chest above top of valve; Fig. 6 a view of steam chest with cover removed, showing back of relief plate. In all the views like letters of reference indicate the same parts.

The Adjustable Balanced Valve.

As will be seen by an inspection of the different views, especially Figs. 3 and 4, steam pressure is eliminated from the valve A by the relief plate B on the back,

has 100 notches, and therefore admits of a definite degree of adjustment being made, the minimum limit of which is a very minute amount. On all sizes the adjusting screw is 10 threads per inch, and the taper of wedges 1 inch in 10. One notch on the collar, therefore, representing $\frac{1}{100}$ of a turn, moves the wedge lengthwise $\frac{1}{1000}$ inch, and the relief plate toward or from the valve $\frac{1}{1000}$ inch, corresponding to $\frac{1}{2000}$ inch on each face of the valve.

This device accomplishes the adjustment of the relief plate to the valve in the most satisfactory manner, being at once positive and simple, and while the results of the adjustment can be extremely minute it is very quickly done and admits of the valve being perfectly steam tight and yet offering no more resistance to movement than the friction of the stuffing box on the stem. The movement of the relief plate in the adjustment is exactly

pose explained hereafter; but the plate cannot be let down further than the adjustment allows, as the wedges cannot be drawn back further than the collars *m* of screws *ll'*, Fig. 5.

The exact amount of inward movement is immaterial, and is regulated by the screw *f*, Fig. 6, which forms the stop for the inward movement of the wedges. This screw taps into the relief plate, and against its head the cross piece of the wedge strikes. When the handle E is turned to the left as far as it will go the wedges are back against the collars and are in proper working position. When, on the contrary, the handle is moved to the right, the screw which works through the stuffing box forces the wedges inward and throws off the relief plate. About one-half turn of the handle is all that is necessary. The handle clamps to the stem of the screw D, and is placed in such

position that when down, as in Fig. 2, the wedges are back as far as the adjustment allows them to be drawn, and the relief plate and valve have their proper working bearing. This position is one of very slight pressure on the valve, just sufficient to keep the surfaces true and bright.

The purpose of this handle and screw is not for adjustment, but to afford a means of separating the valve faces from seats in case they tend to adhere together after the engine has been standing over night or longer. This "sticking" of the faces is very liable to occur with any form of balanced valve, unless loosely fitted, and it is very desirable to relieve it, which this device does perfectly, so that the engine starts with the valve entirely free and the driving mechanism relieved

free to separate from cylinder face and allow the water to be forced into steam chest and exhaust port the same as a plain, unbalanced slide valve, with the difference that it takes the relief plate with it. The danger of accident from water in the cylinder does not, therefore, exist in anything like the degree that it does in engines whose construction does not allow the valve to be forced from its seat under any circumstances. The bottoms of ports are slightly lower than bottom of cylinder. Both steam chest and cylinder are provided with drain cocks or valves.

Ports

The means of admitting and distributing the steam will be understood by a reference to Fig. 3. The valve A, besides taking steam at the ends, has supplemental

A double exhaust is also used, as shown in Fig. 3, the valve being provided with supplemental exhaust ports *c c'*. In the position of the valve shown the exhaust steam passes from cylinder port H into cylinder exhaust passage I, in the usual way, and, in addition, is passing through supplemental port *c* into central cavity K of valve, and thence into passage L, as indicated by the arrows. The provision furnishes a very large area of opening for exit of the exhaust steam, and as the opening also takes place very rapidly, the pressure drops promptly at release and is maintained at or close to that of the atmosphere, even under the heaviest loads, until the exhaust ports close for compression. The plate *e*, forming part of the valve on the relief plate side, is for the purpose of a shield to

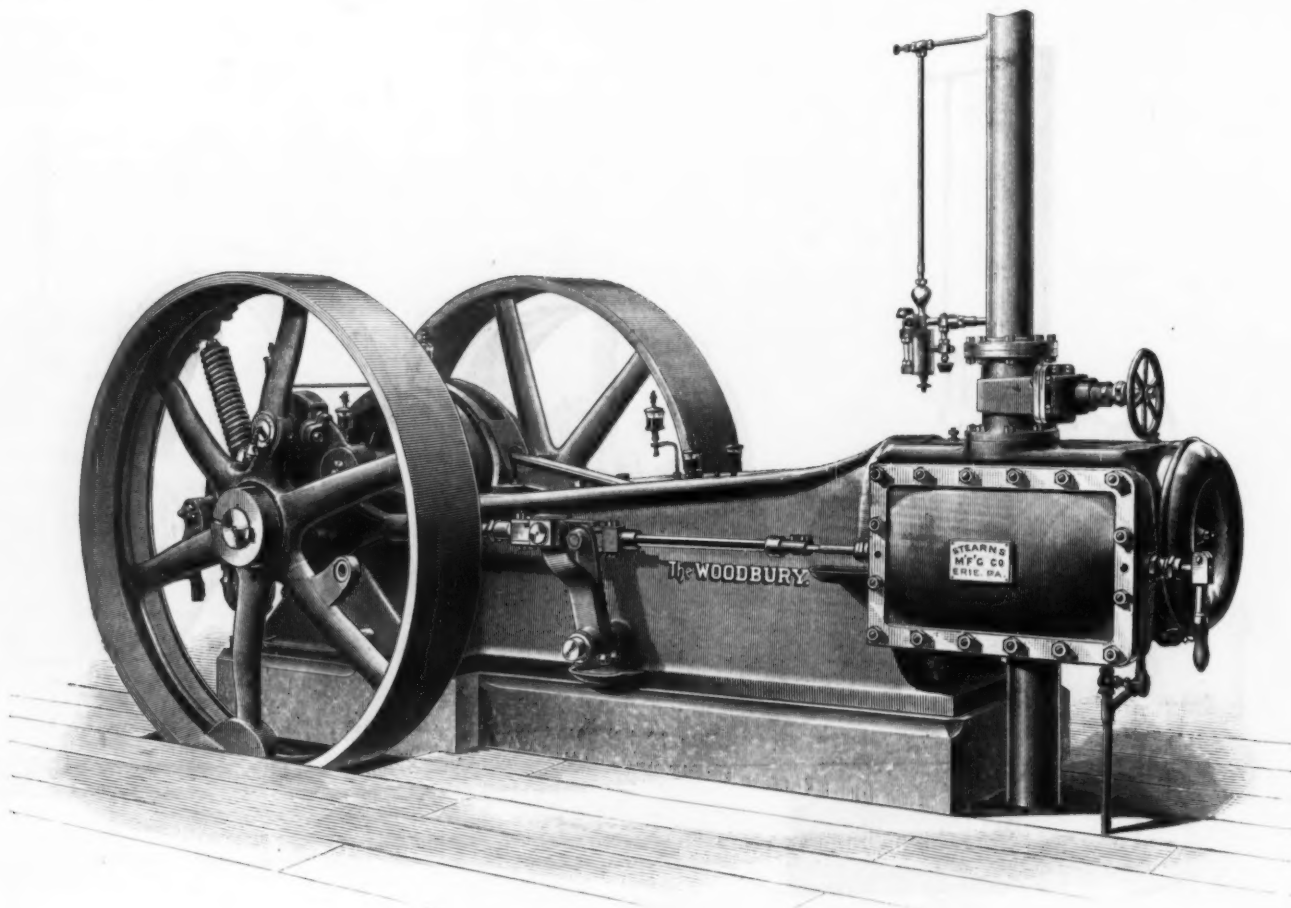


Fig. 2.

AUTOMATIC CUT-OFF HIGH-SPEED STEAM ENGINE.

from any abnormal strain. After the parts are thoroughly warmed up the handle should be turned down, or back, as far as it will go.

The advantage possessed by this device is that of allowing a closer adjustment of the working surfaces than is possible where no such relief is furnished, as, without it, either flat or piston valves must be fitted freely enough to avoid binding or sticking under the conditions above mentioned, and this means a continual steam leakage, which is avoided in our arrangement. It is not strictly a necessity, and could be dispensed with, but it is regarded as a saving of steam, for the reason given, as far more than compensating for the use of this device.

The faces of valve and relief plate are at a slight angle from a vertical position, so that they lay in place when steam is off, and afford greater convenience when adjusting inside.

In case of over pressure in the cylinder, due to the presence of water, the valve is

admission ports *a a'*, which are connected at top and bottom by passages *b b'*, Fig. 4. In the position of piston shown it has passed the center at crank end and has moved a short distance toward the back or head end. The crank end of valve is open for admission of steam, which is entering cylinder port H', directly past the end of valve, and also through cavity *d''* in relief plate into port *a'*, as shown by the arrows. Steam is at the same time entering supplemental port *a* at opposite end at two points, and traveling through the horizontal passages into port *a'* and cylinder port H'. The admission, therefore, takes place at four points at the same time, and as the ports are very large the nearest approach to boiler pressure is reached and the usual loss between boiler and cylinder greatly reduced. The initial pressure is well maintained up to point of cut off, even under the heaviest loads, and the cut off takes place promptly, the closure of course being made at four points simultaneously, the same as the opening.

prevent the exhaust steam impinging upon the face of relief plate and wearing it by attrition so as to cause leakage. This shield does not in any way interfere with free exit of the exhaust, but, on the contrary, assists in guiding it toward exhaust passage I.

The stuffing box G is bolted to steam chest on a surface that is scraped steam tight. The stud holes are somewhat larger than the studs and the stuffing box is, therefore, adjustable both vertically and laterally. This permits a rigid connection of valve rod to valve, that will not wear loose or shakily.

The Cylinder and Piston.

The cylinder and steam chest form one casting. The back head is covered by a polished cap, which also covers the nuts, and is easily kept clean. The front head is bolted between cylinder and frame, the stuffing box being cast with the head. Both heads are made steam tight to cylinder by ground joints.

The piston is hollow and as light as the requirements of strength will permit. It is in length equal to one-half the diameter of cylinder on all sizes, which furnishes ample wearing surface. The packing is simply narrow cast-iron rings, turned eccentrically, and somewhat larger than cylinder, and after they are cut, sprung into corresponding grooves in piston head.

The Frame.

As absolute rigidity, and the ability to meet without flexure or vibration the varying strains imposed by direct thrust and by the action of the moving parts, are among the most essential requirements in securing smooth and cool running, this frame has been designed with these es-

the boxes, the latter being cast with the frame. The frame is of unusual depth, is heavily ribbed on the inside and has plenty of metal in it, especially at the crank end. The top flanges being at their lowest point above the bottom slides, the oil from the latter cannot run down upon the outside of frame. All the oil and drip on the inside runs down on the cross web of the

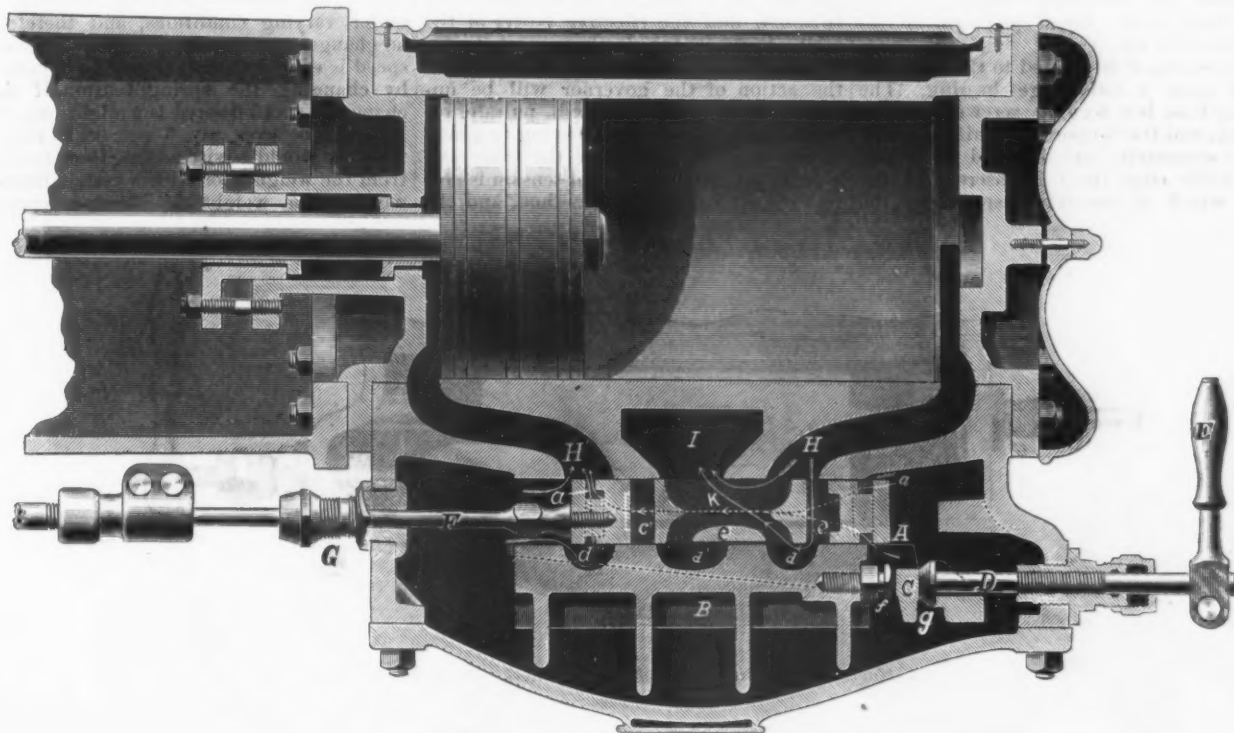


Fig. 3.—Horizontal Section through Cylinder, Steam Chest and Valve.

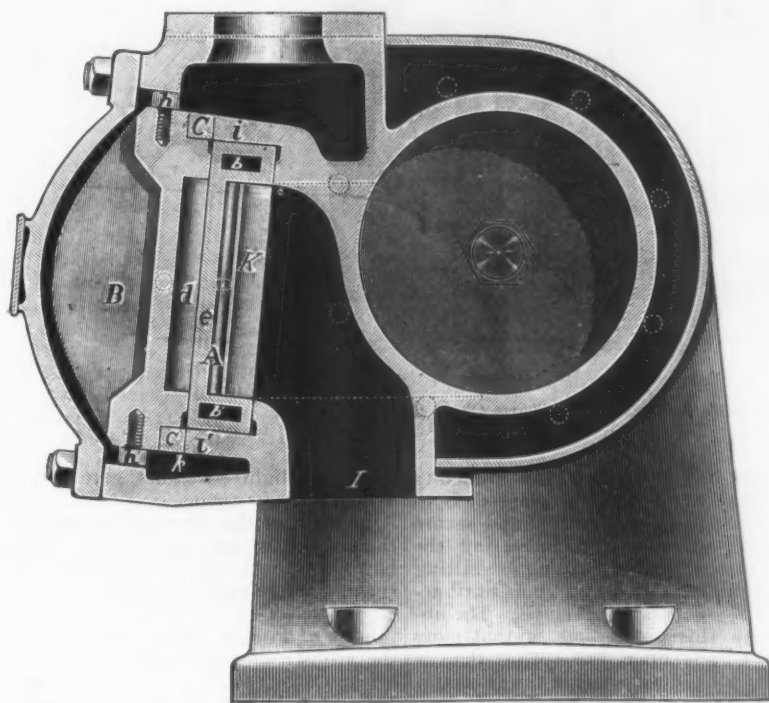


Fig. 4.—Vertical Section through Cylinder and Valves.

The rings do not extend all the way around, a portion of each groove at bottom being filled with a tight section of ring. These must always be left at or near the bottom in making any adjustment of the rod in crosshead. The top of piston rod is so marked near the crosshead and this circumferential position of piston must be maintained.

pecial objects in view. In cross section the frame is a tapering box, wider at the base and heavily flanged at the top and bottom, the top flanges extending from the hood formed at cylinder end in a direct line to main bearings. At the crank end the frame widens out to afford an unyielding support to the journals, and the top flanges also become wider toward

frame to the crank end and is there drawn off through a pipe. Cavities are provided for catching the oil from the main boxes, eccentric and rocker arm. The space between crank disks is covered by two shields, which prevent the throwing of oil from the connecting rod into the room. The inner shield is bolted to frame and the outer one hinged at the bottom so that it can be readily thrown back when desired. Both shields are of cast iron, and besides serving a useful purpose, are neat and ornamental in appearance.

The Governor.

The governor, Fig. 7, is of that class in which the point of cut off or valve closure is effected by moving the eccentric across the shaft, thereby varying the length of the valve travel. The movement of the eccentric is operated by centrifugal weights, the centripetal or opposing force being furnished by a single spiral spring. The peculiar features of the governor are its simplicity and small number of joints, the adjustment of the spring for sensitiveness, and that the direction of the pull of the spring is such as to bring the bearings upon the pivot pins always on the same side, whether the weights be moving outward or inward, thus avoiding all lost motion and rattling due to either wear or loose fitting.

Fig. 9 is a side elevation of the governor. The weight A is bolted to the eccentric arm, and is therefore pivoted to fly wheel at B, the same point as the eccentric itself. The weight A' is adjustable on the lever D, which is pivoted to fly wheel at B', and connected to eccentric C, through the link E. Rubber buffers (not shown) at point a and point b form stops for the extreme inward position of the weights, and the one at c for the extreme outward position.

In the position shown the weights are at their extreme inward point of movement, the center of eccentric being at *d*, and corresponding to point of cut off by the valve at three-fourths stroke. In the extreme outward position of weights the center of eccentric is moved to *e*, where the eccentric gives to the valve its least travel, the point of closure or cut off being at zero. This whole range is under absolute and immediate control of the regulator, with equal precision at all points of cut off.

The spring *F* is pivoted to the eccentric at *G* upon a knife-edge bearing. The spring head is a forging screwed into the spring, and the support for knife edge is made separately and inserted in place. The knife edge itself is inserted in the pin, which is securely fastened to the

regulation are, that the power due to the centrifugal force of the weights as they move outward shall increase in exactly the same ratio as does the power of the spring. When the force of the spring, as the weights move outward, increases faster than the centrifugal force of the weights, there will be too great a difference in speed as between light and heavy loads or varying steam pressures. On the other hand, if the conditions are reversed, and the effective power of the spring increases too slowly to meet the increasing centrifugal force of the weights, the action of the governor will be unsteady and the engine will pulsate, or "race," as it is called. Owing to a lack of uniformity in springs of the same size, no one position with equal tension is correct for all cases. One method, and the

position of the spring, after giving it sufficient tension, which is obtained by the screw at the outer end, if there is too much difference in speed under varying loads and pressures, the slide *f* is moved to carry the spring towards the eccentric pivot *B*. Just inside the racing point is the proper place to fix the adjustment.

The adjustments of the governor are made at the works, the engines being put into actual operation and tested thoroughly under varying conditions, and therefore no changes are necessary. If a different speed is ever required, it may be obtained by changing the spring tension if the change of speed desired is a slight one. If it is to be over, say, 5 per cent. either way, we would advise adding to or taking from the weights, or within certain limits, moving the weight *A'*. Greater spring

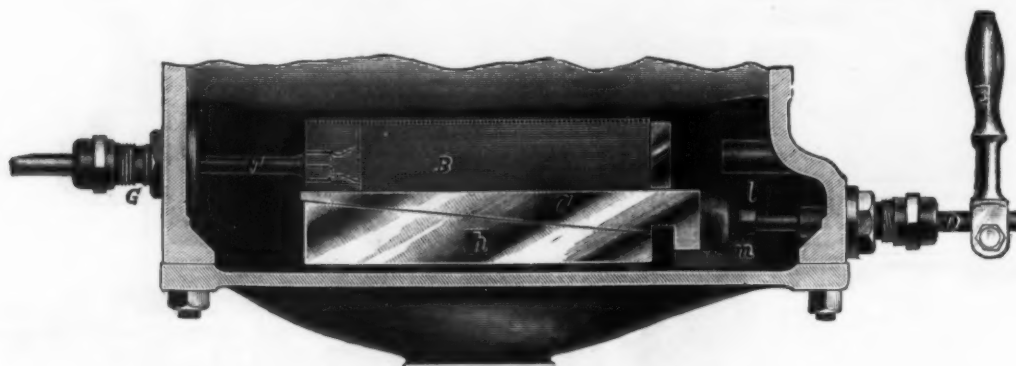


Fig. 5.—Horizontal Section through Steam Chest, Above Top of Valve.

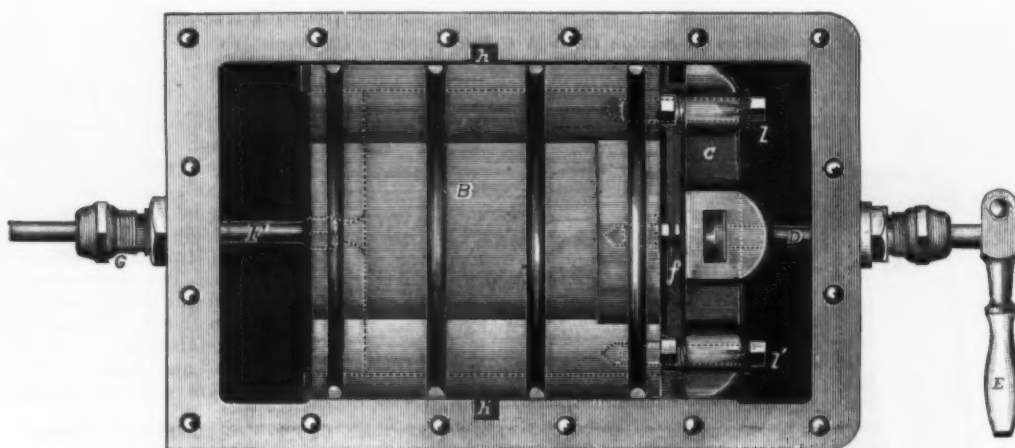


Fig. 6.—View of Relief Plate at Back, with Steam Chest Cover Removed.

eccentric. The knife edge and its support are made of hardened tool steel, so that both wear and friction are entirely eliminated from this important pivot, which receives greater pressure than any of the others. It, of course, requires no oiling.

The outer end of the spring is secured to the wheel in such a manner as to permit of a lateral adjustment of the former along the rim of the wheel, allowing the spring to be swung around on its pivot *G* to a point nearer to or further from the main pin *B*, and forming thereby a more or less acute angle with a line drawn from its point of support *G* to *B*. The bolts *k k'* screw into the rim and pass through slotted holes in the slide *f*, which permit of the necessary amount of movement of the slide and spring. The effect of this arrangement is to make the governor more or less sensitive as desired, the fine adjustment securing for the engine the closest possible regulation.

In all governors of this class the conditions required for perfection of

usual one for correcting this difficulty when good regulation is attempted, is to locate the spring arbitrarily and secure greater sensitiveness by increasing the tension of the spring (loading or shifting the weights at the same time) until acceptable regulation is obtained. The objection to this proceeding is that more tension is put upon the spring than is necessary for proper power in the governor, and this means an undue amount of pressure upon the pins, causing unnecessary friction and rapid wear of the surfaces. This method is to give the spring sufficient tension to furnish ample power for the governor, and to secure the required degree of sensitiveness by allowing it more or less leverage or effective force. An inspection of Fig. 7 will show that as the outer end of the spring is moved upward from the position shown, thus bringing it nearer to the pin *B*, its effective force or leverage is lessened, and an adjustment in the opposite direction has the reverse effect. In adjusting the

tension or lighter weights give increased speed, and *vice versa*.

In most of the fly-wheel governors on the market two springs are used. Owing, however, to the lack of uniformity in springs before mentioned, and which precludes selecting two that are just alike, the use of a single spring greatly simplifies the adjustments described, and makes a certainty of securing the conditions required for the best results. The parts are most substantially made and fitted, the pins being of hardened steel, with bronze bushings for bearings and with proper provision for lubrication.

As will be noticed by the cut, provision is made for changing the weights so as to run the engine in the opposite direction.

The Crank and Shaft.

The shaft *A* and pin *B* are formed with the cranks in one solid steel forging. The counterbalancing disk, the outside of which is concentric with the shaft, is secured to the crank by a wrought-iron clip,

which passes around the end of the crank, extending through the disk and having threaded ends for the nuts, which, when tightened, seat the disk and shaft firmly

parts is effectually neutralized by the counterweight in disks, the consequent horizontal strains being thus transferred into a vertical direction, where they are

determined for this engine by a series of experiments throughout the entire range of speed and with changeable counterweights. The proportions adopted are



Fig. 7.—Face View of Governor.

together. The crank is turned off for a short distance on each side concentric with the shaft and the disk bored to correspond, which forms a true and permanent seat. The central space or recess cored in the disk is filled with soft metal which fits closely against the shoulders in crank, formed at the ends of the turning, establishing the permanent longitudinal position of the disk.

By this construction there is secured the important advantage of a removable disk, which is a feature greatly appreciated if at any time it is desired to true up the crank pin. The disks can be readily removed after unscrewing the clip nuts, and the pin can then be trued up in a lathe. This is an improvement over the usual method of filing the pin by hand. The disks are not only removable, but when replaced they return to precisely their original position in every direction, and will run true with the shaft.

This disk has less weight on the crank side than any other in use, and consequently requires less on the opposite side to obtain the required counterbalance. Its form permits of easy access to the crank-pin boxes and affords ample room for their adjustment.

The inertia of the reciprocating parts is a subject of interesting study for the engineer, and has of late years received more attention than was formerly given it. It may be stated that the vibratory action due to the inertia of the reciprocating

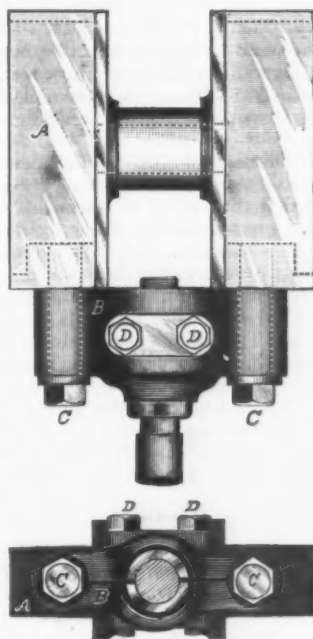


Fig. 8.—Cross Head.

such as to secure perfect smoothness of action and an entire absence of vibration under the different conditions of load, speed and steam pressure. The engines are tested for this quality by loosening the foundation nuts, and, with the belt off, running the engine up to speed. With the proper amount of counterbalance no vibration or tendency to longitudinal movement is shown, the engine running as steadily as when bolted down.

The Crosshead.

The upper view in Fig. 8 shows the top of crosshead, and the lower one is an end view, the piston rod being in section. The body A of the crosshead is made hollow for lightness and the hub B is secured to same by the two bolts C, which tap into crosshead. The holes in hub are made somewhat larger than the bolts, and after the alignment of piston rod is made and the bolts screwed up in place, the space around each bolt is filled with lead or other soft metal. The hub, which is very long where piston rod passes through, is threaded for one-half of its length for the rod. It is split horizontally between the bolts C, as shown in the lower view, and the two bolts D clamp it firmly to the rod. The pin is flattened at top and bottom and the boxes cut away to correspond. The advantages of the separable crosshead are threefold, and are stated to be as follows:

1. It allows the pin to be turned in an ordinary lathe, thus securing true surfaces

met by the foundation and transmitted to the solid earth.

The relative weight of counterbalance to that of the reciprocating parts has been

when new and enabling the pin to be returned if it ever becomes necessary.

2. The alignment of piston rod in construction is simplified and greater accuracy insured, as the hub is adjustable in each direction before the spaces around bolts are filled, instead of occupying an arbitrary position.

3. It enables the vertical adjustment of piston rod to be made, should the wear of piston or crosshead in course of time appreciably alter their relative vertical positions. While the proportions of wearing surfaces are such that ordinarily the downward wear of piston and crosshead are about equal, conditions may arise whereby the crosshead will wear faster than the piston and *vice versa*; should either of these occur, the adjustment can be made by taking out the bolts C, removing the soft metal and making the proper re-alignment, and pouring soft metal again around the bolts after they are screwed up in place.

The clearance between piston and cylinder head is kept practically equal at each end by turning the piston rod in crosshead one revolution at a time, when the wear of the connecting-rod boxes requires it. The operation of loosening the clamp bolts, turning the rod and tightening the bolts again is a very simple one, and the adjustment can be quickly made.

The Connecting Rod.

The construction of main connecting rod will be readily understood by an inspection of Fig. 9. The body of the rod A is of I section, a form securing the maximum degree of stiffness with minimum weight, and tapers in depth, as shown, from crosshead to crank-pin end. The strap B is secured in position by the key bolt C, which binds it firmly to the butt and performs the additional function of providing adjustment for wear. The key, which is of double wedge form, bears against the strap at top and bottom in front, and against the butt end of rod on the back. The upward movement of key will obviously draw the strap forward and the wearing surfaces closer together. The washers *a b* are hollow, or cup shaped, and receive the tapering portions of the key. The butt and strap are bored out for the babbitt metal bushings *c c'*, which are held in position by the babbitt anchors *d*. These anchors are poured after bushings are placed in position.

The construction is alike at the crank pin and the crosshead ends.

It will be noticed that the bushings or linings have no flanges at the ends, the butt and strap being in width equal to the length of the pin, and the bushings are, therefore, supported their entire length. The rounded portion of strap is thickened to give it greater stiffness and to receive the working strains without springing. This insures the boxes being perfectly supported at all times under the heaviest duty, which operates to secure greater durability of the wearing surfaces and cool running.

A highly advantageous feature of this rod is in the fact that the end of butt, being semicircular in form, surrounds one-half of the pin, and the inner half of box or bushing receives its vertical support from the rigid butt instead of from the strap, the latter being the case with the ordinary construction, in all of which the straps are more or less elastic. The hinging action or springing of the ordinary strap, which takes place at high speed, produced by the rapid up and down motion of the crank pin, is avoided in this construction, as will be apparent by comparing it with the ordinary strap joint. This feature is of importance and value, and gives it no small share of credit for the uniform coldness with which this crank pin runs. The rod in this respect possesses the advantage of the "English"

connection, which is a vertical half box bolted to end of butt. In this rod, however, less weight is required at the butt, and the adjustment for wear is much easier made.

As the key cannot fly out, and there is no set screw to break or twist off, this rod is safer than the ordinary gib and key connection, especially when the latter is used at the crank-pin end. It possesses in a marked degree the elements of strength, rigidity and lightness, all of which are important factors in the securing of successful and satisfactory operation.

The Main Bearings.

The main bearings on each side of the crank are cast solid with the frame, and the caps are placed at an angle of 30° from a vertical line. Set screws passing through cap and having their bearing against the outside of box form stops to prevent the cap from pinching the shaft, so that the cap can be bolted down hard and leave the shaft entirely free. A gib at the top furnishes means of vertical adjustment, so

which affords but temporary relief. This valve is not partially, but wholly, balanced, and, with the proper adjustment, works in entire equilibrium. There being no pressure upon the faces, the wear is very slight, but, slight as it is, it must be provided for to maintain the steam tightness that is necessary to secure the best economy. This method of adjustment effectually does this.

In regard to regulation this engine is stated to be decidedly superior.

The adjustment with which the governor is provided, by changing the position of the spring, allows the nearest approach to isochronism, or perfection of regulation. This is a condition in which the speed would be absolutely the same under all loads and pressures. The nearest realization to this state of perfection is just inside the point at which vibration or "racing" appears, and this is secured in our engine by the spring adjustment, as already described.

Tests made by the well-known engineer, Geo. H. Barrus of Boston, show that this

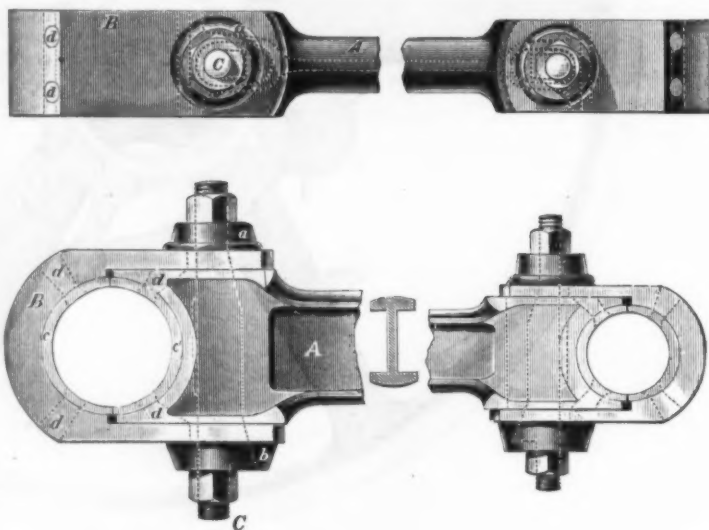


Fig. 9.—Main Connecting Rod.

that the downward as well as the side wear of journals and boxes is provided for, and the adjustments are made in the direction that the wear takes place. The surfaces are so large and well fitted, however, and the journals and boxes made from materials of such excellent wearing qualities, that the wear is very slow.

The linings for the main boxes are similar to those used in the connecting rod, except that they are of uniform thickness, and they are secured in place by anchors in the same manner. The box and cap are bored out to receive the linings. Any soft metal will answer for the anchors, which are poured after the lining is placed in position. The linings are made in molds and are uniform in size, and the renewal of main box bearings becomes a simple matter. The anchors hold the linings firmly in position, giving them a solid backing over the entire surface, the same as though they were in one piece with the frame and cap.

Résumé.

It will be seen from the foregoing description that the valve adjustment provided allows steam tightness to be maintained throughout the lifetime of the engine. This is a feature of the greatest importance, for it is a well-known fact that the large steam consumption or poor economical showing of many engines, both high and low speed, must be in a great measure charged to valve leakage. With the majority of valves renewal or scraping is the only remedy, either of

claim is founded upon the actual performance of the engines.

Durability and Cool Running.

These desirable qualities go hand in hand, and result from the liberal wearing surfaces provided at all points, combined with a careful and workmanlike fitting of all rotating and sliding surfaces and the selection of the best wearing materials.

The great natural gas company, known as the Philadelphia, which supplies fuel to manufacturers in Pittsburgh, makes a report showing a net profit for last year of \$1,148,000 and \$3,000,000 of undivided profits. President Westinghouse said he believed natural gas can be had in paying quantities for at least six years to come, and that when the natural article gives out the company will at once supply, through its existing plant, artificial gas for heating purposes. This would be a very comfortable outlook if in connection therewith it did not contemplate an advance in price to 20, 30, 40, 50 and even 70 cents per thousand.

Irwin, Field & Co., manufacturers' agents, located in the Pittsburgh Block, Helena, Mon., is a new concern recently established in that city. They propose to handle a full line of manufacturers' goods, such as bar, angle and I iron, corrugated roofing, axles, hinges, cut and wire nails, &c. Mr. Irwin of the above firm was for a number of years secretary of the La Belle Iron Works of Wheeling, W. Va.

Grant Locomotive Buildings.

The Grant Locomotive Works Company of Chicago, incorporated with a capital stock of \$800,000, have just submitted their architect's plans and asked for bids. Edward T. Jeffery, late general manager of the Illinois Central Railroad, is president of the company, who have purchased the somewhat famous tract of land known as "Section 21, Cicero." Sixty acres in this tract, at the northwest corner of Sixteenth street and Robinson avenue, have been reserved as a site for the locomotive works. The capacity of the works will be about 250 locomotives per annum, and the entire plant will be completed within two years. Preliminary operations will begin this summer. The works will be the only locomotive manufacturing establishment west of Dunkirk, N. Y., and Pittsburgh, Pa. The section is bounded upon three sides by Oak Park, Austin, Moreland, Morton Park and La Vergue, while upon the remaining side, the east, lies Chicago. The works will be a little over 6 miles from the court house. The land itself is owned by the Grant Land Association, a corporation organized in connection with the locomotive works company, and the title is vested with David B. Lyman and Edward T. Jeffery, trustees. The Wisconsin Central Railroad runs along the north side and the Chicago, Burlington and Quincy along the south side of the tract. Both roads will have depots at Forty-eighth street, and the company says that both will extend their tracks from the main line and enter the heart of the tract at Sixteenth street. The Twelfth street and Ogden avenue street car line is completed to within a short distance of the purchase. The dimensions of the principal buildings are as follows:

	Feet.
Machine shop.....	110 x 370
Erecting shop.....	80 x 285
Hammer shop.....	80 x 125
Blacksmith shop.....	80 x 250
Paint shop.....	70 x 100
Boiler shop.....	100 x 250
Wood shop.....	70 x 230
Pattern shop.....	60 x 130
Foundry.....	89 x 260
Dynamo room.....	50 x 60
Core room.....	50 x 60
Cupola room.....	60 x 80
Boiler room.....	50 x 70
Office and stores.....	40 x 130

These buildings will cover in all over 200,000 square feet. The full list of officers is as follows: Edward T. Jeffery, president; directors, R. Suydam Grant, William J. Watson, J. Fred Pierson, Morris Sellers, Elbridge G. Keith, Willard T. Block, J. H. Wilson, George M. Bogue and the president.

The National Storage Company, Calumet Building, Chicago, have secured an important judicial decision relative to the value of warehouse receipts. After long litigation, caused by the assignment of T. W. Hall & Co., wool merchants, the Illinois Supreme Court has decided in favor of the company. The appellate court had allowed the company for their receipt holders all the wool belonging to T. W. Hall & Co. found upon the premises when the assignment was made, notwithstanding a vigorous fight by all the creditors of Hall & Co. combined against the storage company. The decision of the appellate court was affirmed by the supreme court. The company announce that they take special care that their warehouse receipts shall represent certain specified property which must remain undisturbed and isolated until the receipt is returned to them for cancellation.

The terms of the consolidation of the Moline Plow Company, the Deere & Monro Company and the Deere & Co. Harvester Works, all at Moline, Ill., are said

to have been agreed upon at a meeting of the parties in interest in Chicago, 6th inst. The capital of the consolidation will, it is said, be \$3,500,000. It will manufacture all kinds of farm machinery, and prices, it is claimed, will be reduced. The main part of the plant will be located at Moline, but there will also be a branch establishment near Chicago.

NEW PUBLICATIONS.

MEMOIR AND LETTERS OF SIDNEY GILCHRIST THOMAS. Edited by R. W. Burnie. John Murray, Publisher, London.

In the recent history of technical development there is no more striking career than that of Sidney Gilchrist Thomas, the inventor of the basic process. His early struggles for a living and a technical education culminated in an extraordinary activity when he suddenly rose to fame and fortune, and the frail man sank to an early grave under the tremendous strain. During the short period in which Thomas was the most conspicuous figure in the steel world he became widely known, and his visits to this country brought him into contact with the leading men among American manufacturers. But little was then, and is now, known of his early struggles and of many sides of his character which the memoirs just published by his relative, R. W. Burnie, well bring out.

Sidney Gilchrist Thomas was born on April 16, 1850, at Canonbury, and grew up in a home which encouraged intellectual development. He was beginning to prepare for the study of medicine at London University when his father died suddenly of apoplexy, and it was then that he took upon himself the burden of earning a living as a clerk in one of the London Metropolitan police courts, beginning at a salary of £90 per annum. He soon began, however, to devote every leisure hour to study in another field, taking up chemistry in 1871. In 1872 he passed an examination in mineralogy at the School of Mines, following it up with an examination in inorganic chemistry in the following year. In 1873 he visited the famous Low Moor Iron Works, which led to the first of a long series of contributions to *Iron*. Frequent visits were made to metallurgical establishments, and the study of current foreign and English literature on the subject widened his views and his knowledge. As early as 1875 he attempted to obtain a Bessemer blow by means of an improvised converter in the ordinary domestic fire place, but it was not till 1876 that he communicated his theories in detail to his cousin, Percy C. Gilchrist, then chemist in Crom Avon. In the summer of that year he made a tour through Germany. His letters written during this time reveal his interest in many subjects besides those of his adopted profession. The fruit of this brief season of travel, a series of sketches contributed to *Iron* under the title of "Technical Travel Talk" are chatty, though they contain little that can be regarded as a contribution of value to technical literature, a fact which is not astonishing when it is considered how exhaustively German writers have covered the ground.

In 1877 Thomas went to visit the Belgian iron works as the accredited correspondent of *Iron*, but before beginning his work took a dash into Switzerland. Toward the end of that year experiments began more vigorously, Thomas in the mean time industriously searching the patent records. Early in 1878 Edward Martin, manager of the Blaenavon works, was informed of the tests, and at once afforded facilities for experiments on a larger scale,

coming to the aid of the undertaking financially at the same time. Trials at Dowlais followed.

It was at the spring meeting of the Iron and Steel Institute of that year that the first modest announcement was made by Thomas of his results during the discussion of a paper by Sir Lowthian Bell on dephosphorization. The statement was passed over without attracting any attention whatever. In the mean time he was fighting for his patents, notably in the German office. Finally the point had been reached when publication was considered desirable. Thomas and his cousin Gilchrist prepared a paper to be read at the autumn meeting of the Iron and Steel Institute at Paris in 1878. So little importance was attached to it that it was scarcely noticed and was left unread. We believe that we are correct in stating that *The Iron Age* was the only technical journal on either side of the Atlantic which printed a long abstract from this paper in its issue of October 24, 1878. While the majority of metallurgists gave the matter little attention, Mr. Thomas succeeded in interesting E. Windsor Richards, during an excursion to Creusot, who was so much impressed that he erected converters, and in April, 1879, was able to show the operation. The news of the success achieved spread with wonderful rapidity, and Thomas was fairly besieged. The excitement reached its highest pitch at the meeting of the Iron and Steel Institute, in May, 1879, and, success being assured, Thomas resigned his junior clerkship in the Thames Police Court on May 10. Then followed a period of extraordinary activity. Thomas had become, after Sir Henry Bessemer, the most famous metallurgist living. He was constantly traveling from one works to another, on the Continent and in England, watching the progress of his invention and conducting the many varied negotiations in connection with it. Early in 1881 the necessity for relief from work became apparent, and Thomas spent some time on the Isle of Wight. On the 10th of March he sailed for this country, where he was accorded an enthusiastic reception, which, from some of his letters, appears at times to have wearied him.

Early in July, 1881, Thomas returned to England, and after a brief period of rest again plunged into work, spending much of his time in Germany, but in the fall of 1882 was forced by ill health to start for South Africa, from where he traveled to India, and finally to Australia, eagerly gathering information on his way. June, 1883, found him in San Francisco and in July he was home again, plunging back into an incessant round of business. His health had not improved, and in the fall he was forced to go to Algiers, where he employed himself actively in working out the utilization of basic slag and in developing an improved typewriter. Amid all this eagerness to follow fresh fields of discovery, Thomas' health was steadily declining, the fatal lung disease strengthening its hold upon him. In July, he reached Paris to place himself under the charge of a noted physician. He died in Paris on February 1, 1885.

The greater part of Mr. Burnie's work consists of letters from Thomas which reveal his intimate life and thoughts, making the volume doubly attractive.

Entrance examinations for the Massachusetts Institute of Technology will be held on June 25 and 26, in New York City, Philadelphia, Chicago, St. Louis, Cincinnati, San Francisco, Washington, D. C.; St. Paul, Pittsburgh and Montreal.

Shipments of copper from the Lake Superior region commenced 4th inst. by the water route.

The Davies Tin Plate Cleaning Machine.

Isaac Davies of Phoenixville, Pa., who is familiar with the manufacture of tin plate, has been recently granted a patent, of which one-half has been assigned to F. R. Phillips of Philadelphia, for a machine for cleaning tin and terne plate.

A, represents a suitable frame work, which is placed upon ground sills B. Journaled in suitable bearings upon this frame work, A, are the three pulleys C, which are arranged in the relation to each other as shown, and around which passes the endless band or belt D, of any suitable material, and to which are secured the supports E in any suitable manner. These supports E are made of flat plates placed at a suitable angle, and which serve as supports for the tin or

placed upon the shaft of one of the rollers F. The rotary motion is conveyed from the first roller to the others of the series by the idle wheels P, so as to have them all revolve in the same direction.

Upon one end of each roller shaft is placed a wide gear wheel, Q, so that the rollers will not get out of gear as they are reciprocated, and upon opposite heads of the shafts are formed the grooved heads R. In between each set of four rollers is pivoted a vertical lever, S, in the bearings T, and through each lever, S, are formed the openings U upon each side of the center, through which the pivotal bolt passes. Through the openings U in the lever S are passed rods which catch in the grooved heads R of two of the upper rollers and through the two of the lower corresponding rollers, so that when the levers S are caused to rock upon their bearings the upper rollers F are moved

from the shaft M. Also secured to the shaft B' is a pulley, F', around which passes the belt G', down around the pulley H', journaled near the bottom of the shute I', in which the bran, sawdust or other cleaning material is placed. To the endless belt G' are secured buckets, which carry up the bran or other cleaning material and drop it upon the tin plates as they are passing through between the two sets of rollers F. The movement of the plates carries the cleaning material in between the rollers, and as the rollers reciprocate the plates are thoroughly cleansed. As cleaning material falls from the rolls it drops upon the shute I' and rolls down to where it will be readily gathered up by the buckets upon the belt G'.

The principal object of the machine is to economize labor. It dispenses with three girls to a side, or nine girls to each mill, as now employed in Wales. The

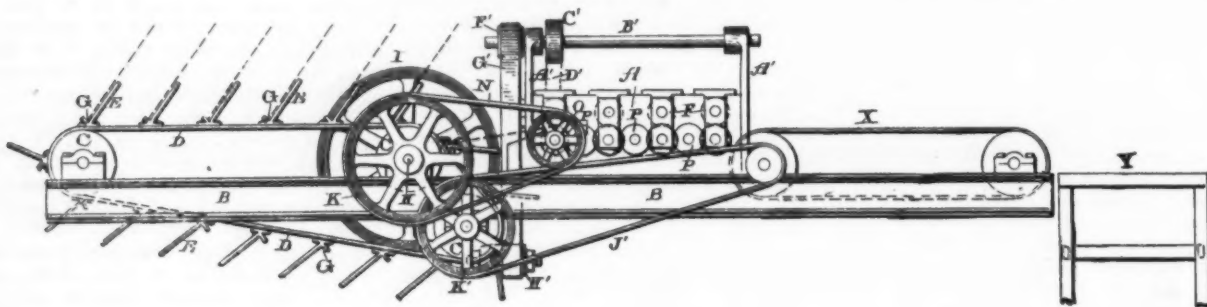


Fig. 1.—Side Elevation.

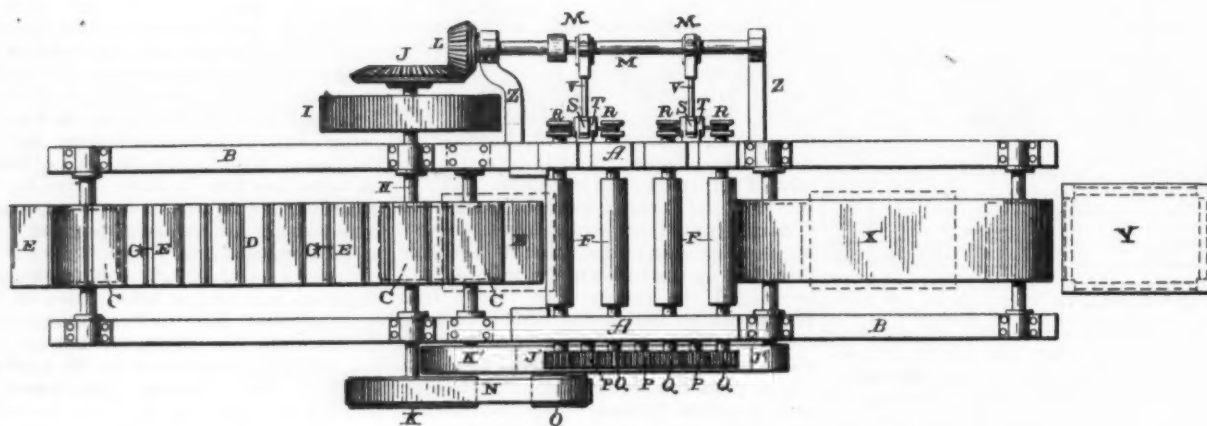


Fig. 2.—Plan.

THE DAVIES TIN PLATE CLEANING MACHINE.

terne plates while being conveyed to the cleansing rollers F. The tin or terne plates are held in position by having their lower ends catch against recesses G, formed in the bases of the supporting plates E. When the plates reach the point where the belt begins to descend from the inner to the lower roller, the tin or terne plates are just long enough to reach to the adjacent end rollers F, as shown by dotted lines in Fig. 1, and as the belt continues in its revolution it moves forward, owing to the incline formed in passing around the lower pulley C, and thus pushes the plate forward until its outer end is caught between the said rollers F, when it is carried by them to the other rollers.

The operating shaft H, provided with the driving wheel I, passes through one of the rollers C, and this shaft H has a beveled wheel, J, secured to one end and a pulley, K, secured to the other. The wheel J meshes with the pinion L upon the shaft M, while from the pulley K extends the belt N, which operates the pulley O,

endwise in one direction at the same time that the lower rollers are reciprocated in an opposite one. This reciprocating motion is given to the rollers F at the same time that they are revolving, so as to thoroughly rub or scour the plates which are passing through between them. To the lower end of each lever S is loosely connected an eccentric rod, V, which is operated by an eccentric, W, placed upon the shaft M. As the plates issue from between the last pair of rollers they are deposited upon the endless belt X, which conveys them to the table Y in the sorting room. The belt X is operated by the belt J', which passes around one of its pulleys, and which belt J' is operated by a pulley, K', upon one end of the lower roller C. The shaft M is journaled in suitable bearings, Z, which extend horizontally from the frame B.

From one side of the frame A rise two standards, A', in which is journaled a shaft, B', upon which is placed a pulley, C', around which extends the driving belt D'

machines are manufactured by the Trethewey Mfg. Company of Pittsburgh, Pa., and orders have already been taken by F. R. Phillips. They are put down under a guarantee.

The Bates Machine Works.—The Bates Machine Company of Joliet, Ill., are meeting with excellent success in developing their engine department. The Bates Corliss engine has met with much favor for general work, and is now being adopted for heavy service. The company have in hand at present a 1300 horse-power engine, which is intended for use in a Cleveland rolling mill, also an 800 horse-power engine for Joliet and a 700 horse-power engine for Cincinnati. The fly wheel for the largest engine mentioned will weigh 60,000 pounds. In connection with other contracts the engine department now has enough orders to run for four months. The machine shop of this establishment is a substantial brick building with a lantern roof, and is 200 feet

long by 110 feet wide. It is equipped almost entirely with Niles tools of a character and capacity to handle any class of work from light machinery to very heavy constructions. A pit lathe of their own design has recently been put in, which will handle a wheel up to 34 feet in diameter and any width of face. The wheel revolves on its own mandrel, and two cutters are operated on each side of the pit. The machine shop is now being fitted with large cranes to handle the heavy work upon which the company have recently entered. The foundry is also built of brick and is 180 feet long by 100 feet wide. The pattern shop is 100 feet by 50 feet. A new 72-inch cupola is being put in the foundry to meet the requirements for heavy work. A large wheel weighing 50,000 pounds has just been cast to go to Omaha. It is 22 feet in diameter, with a 50-inch face. In addition to engines the company build barb-wire machines, and have equipped a number of the principal

in the articles agreed upon with the American Government as compensation for its free admission of sugars; but that she will seek other ways in which to recuperate her concessions is certain." The local population, therefore, are not altogether reassured.

The Tinned Plate Manufacturers' Association.

Under date of May 8 the Tinned Plate Manufacturers' Association sends out the following over the signature of J. W. Britton, chairman, and C. R. Britton, secretary, Cleveland, Ohio:

It can be truthfully stated that the manufacture of tin and terne plates has been inaugurated in the United States, and the new industry established so firmly that nothing now can prevent its advancement nor crush the enterprise and determination already shown. Twelve differ-

equaled one-third the amount of such plates imported and entered for consumption during any fiscal year after the passage of this act and prior to said October 1st, 1897."

Now this clause, the fact that 12 tin-plate works are in course of construction, and the prediction that the law will not be changed should stimulate to immediate action all those who are contemplating going into the manufacture of this article. Cost sheets have been prepared, and from actual practice proved nearly correct, which show that this industry offers far better returns for capital invested than many iron and steel interests, and especially as compared with the manufacture of iron and steel sheet, either black or galvanized.

At a meeting held in New York City on April 29, 12 works were represented in person or by letter, and, after a general discussion of the prospects of the industry, of plans for its advancement and of new methods to increase the product and facilitate the manufacture of tin and terne plates, a temporary organization was formed under the name of

"The Tinned Plate Manufacturers' Association."

Object: "To promote the manufacture of tin and terne plates in the United States."

The following gentlemen were appointed a committee on permanent organization and requested to report at a meeting to be called for May 20 in Pittsburgh, Pa. (time and place to be named hereafter), to which all interested in the subject are invited and earnestly requested to send a representative.

Chairman: J. W. Britton, the Britton Rolling Mill Company, Cleveland, Ohio; F. G. Niedringhaus, St. Louis Stamping Company, St. Louis; D. M. Somers, Somers Bros., Brooklyn, N. Y.; Alfred Marshall, Marshall Bros. & Co., Philadelphia; W. C. Cronmeyer, United States Iron and Tin Plate Company, Demmler, Pa.

Secretary: C. R. Britton, the Britton Rolling Mill Company, Cleveland, Ohio.

This meeting will be addressed by prominent manufacturers and consumers on subjects of importance and interest to both.

You are requested to inform the secretary at your earliest convenience the number of mills you intend to run on sheet for tin plate.

If mills are contemplated or in course of construction, how many, and when will they be completed?

If good returns for the capital invested can be shown, can you be induced to erect tin-plate works?

And will you be represented at the meeting in Pittsburgh on May 20?

The association has at hand information, and obtaining more daily, which is at the disposal of all who are interested and wish to be informed.

The Ericsson Monument Committee.

—The Ericsson Monument Committee, incorporated by the Legislature for the supervision of the erection of a statue or monument in one of the public parks of this city as a memorial of John Ericsson, the inventor of the monitor, organized by the election of Col. W. C. Church as chairman and Ashley W. Cole as secretary. The commission is composed of William C. Church, the literary executor of John Ericsson; V. S. Lassöe, who was a partner of Mr. Ericsson in the designing and construction of the Monitor; George H. Robinson, Thomas W. Rowland, the builder of the Monitor; George Inness, John D. Crimmins, Ashley W. Cole, William H. Shelton, William C. Whitney, ex-Secretary of the Navy; William H.

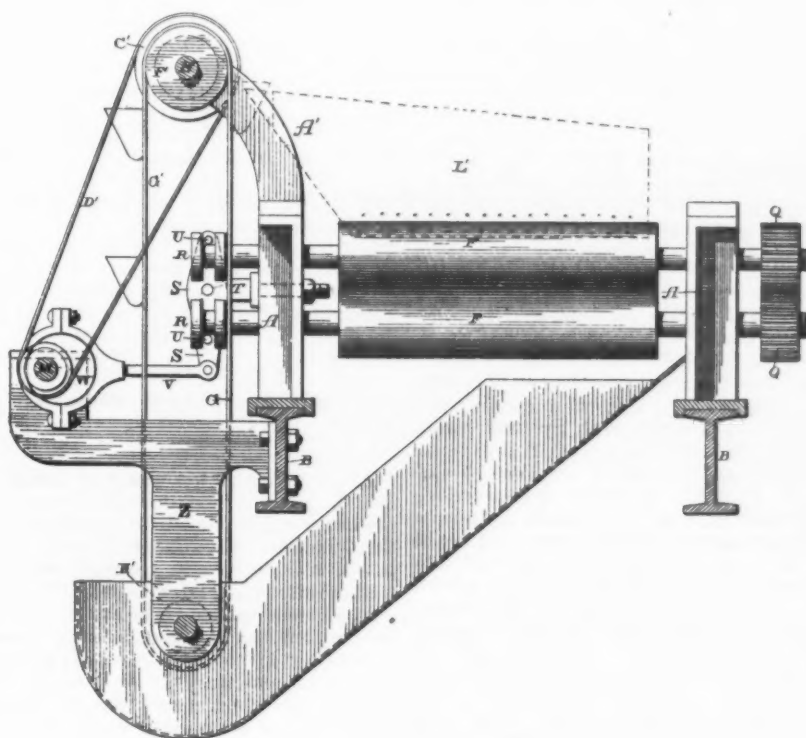


Fig. 3.—End View.

THE DAVIES TIN PLATE CLEANING MACHINE.

barb-wire factories in the country. They also manufacture staple machines and stonecutting machinery. The works are at present running night and day, being lit at night with electric lights.

Spain's improved relations with Cuba, to be hoped for as a result of the new treaty with the United States, come none too soon, if the accounts received respecting the financial straits of the island can be relied upon as correct. Although Minister Fabie in the Cortes says "Cuban taxes at present are moderate" representations come from other sources that the forced sales for taxes weigh heavily, especially among the poorer classes. A correspondent says: "We know that it is in contemplation to sell at auction more than 2000 houses—that is to say, nearly half the city." And adds: "In the present state of affairs Spain will cede from sheer necessity only sufficient reciprocity with the United States to prevent the exclusion of Cuban sugars, and for the same reason, of course, rescind the export duties on them; will no doubt persist in the law of 1882 in all points except

ent works, with a combined annual capacity of 60,000 net tons, are in course of construction, some of which are already in operation. This amount is equal to about one-sixth of the tin plates imported in the year 1890, and must be admitted to be an excellent showing, considering that the duty on this article under the new Tariff law does not go into effect until July 1 next.

Men who are capable of judging and in a position to do so predict "that the Tariff law of 1890 will not be changed in ten years unless it be changed on protection lines." But there is a clause in the law concerning the duty on tin plates which reads as follows: "Provided that on and after October 1st, 1897, tin and terne plates lighter in weight than 63 pounds per 100 square feet shall be admitted free of duty, unless it shall be made to appear to the satisfaction of the President, who shall thereupon by proclamation make known the fact, that the aggregate quantity of such plates lighter than 63 pounds per 100 square feet produced in the United States during either of the six years next preceding June 30th, 1897, has

Webb, the shipbuilder; John O. Sargent, S. W. Taylor, C. S. Bushnell and Daniel C. Worden, son of Admiral Worden, who commanded the Monitor in its fight with the Merrimac.

University of Pennsylvania.

In the improvements in contemplation at the University of Pennsylvania, the plans for which are now under way, two of the needs of the University of Pennsylvania which have lately made themselves strongly felt will be provided for. One is the necessity of improving the heating and ventilation of existing buildings and providing for that of new buildings, either in process of construction or to be erected in the immediate future. The other is the need of providing for the growing demands of the department of Mechanical Engineering. This department, which was established 16 years ago, grew slowly though steadily, until within the past three years when the numbers of students began to increase rapidly. Additional facilities were provided, but in the last year the numbers have still further increased, and the department has found itself greatly hampered for lack of room.

The trustees determined to meet both of these needs at the same time. Heretofore each building has been heated by a separate plant in its basement, and has been lighted by gas. It has been decided to build a central heating station, with a present boiler capacity of 1200 horse-power from which to heat all the buildings, at present 11 in number. In addition, the buildings are to be lighted throughout by electricity, and to be thoroughly ventilated by the use of large ventilating fans in the basement, which are to be driven by steam or electric motors; while the ventilating flues in the old buildings are to be changed to accord with the best modern practice. The engines and dynamos for this purpose are to be placed on the ground floor of a separate building, the two upper floors of which will be used by the Mechanical Engineering Department. These two buildings are so designed that additions may be made to them as need arises. The entire plant is to be put in, not only for the purpose of furnishing light and heat in the most economical manner, but in addition it is designed especially for the purpose of instruction, for which it will at all times be available.

The boiler house will be 100 feet long and 50 feet wide, and one story high, furnished with a stack of sufficient size for a plant of 1200 horse-power, to provide for future growth of the university. The provision for coal bins, ash vaults and weighing scales will be made in the most complete and convenient manner for the purposes of testing and instruction. The boiler plant (1200 horse-power), will contain examples of the Galloway, return tubular, marine and sectional boilers, ample in capacity for heating the present buildings, as well as the new Hygiene building, now under construction, and the large dormitory or apartment house about to be erected. Steam will be generated at 100 pounds, used in the engines, and, when exhausted, will be used for heating, so that the power used in generating electricity for lighting will be obtained at a minimum of cost, and the lighting of the buildings will be very much better than at present. Owing to the configuration of the land, it is possible to get a gravity return of the water from the condensed steam from all the separate buildings to a well in the boiler house, from which it will be pumped into the boilers. The piping between the central station and the several structures will be on the Holly system.

Separated from the boiler house by a distance of 15 feet is the building for the Mechanical Engineering Department, which will contain in its basement the engine and dynamo room. This building will at present have a length of 80 feet and a width of 45 feet, with a provision for any desired extension in the future. In the dynamo room will be located two 100 horse-power compound engines, and two engines of the high-speed type, similar to the Porter-Allen, Straight Line, or Armington & Sims. The Corliss engines now in the department will be removed to this floor, leaving the Porter-Allen engine where it now is, for the purpose of furnishing power to the mechanical workshops of the department, which will remain for the present in the basement of the Scientific building. These shops are to be considerably enlarged and improved, so that instruction may be furnished in carpentry, wood turning, chipping, filing, blacksmithing, pattern making and molding, to 50 students at the same time, if this should be desired.

The electric lighting will be partly on the alternating and partly on the direct current system. Two 500-light 1000 volts alternating and four 500-light direct current dynamos are to be employed. As with the boilers and engines, it is proposed to use several types of American machines. The two alternating dynamos will be connected to a separate switch board, and so arranged as to run either singly or in parallel, or one may be run as a motor. The direct-current machines will be compounded, but so arranged that by throwing a switch they become shunt machines. These will also be so connected to their switch board as to run separately or in multiple. One alternating and one direct machine will be connected by belt to each of the compound engines; the remaining dynamos will be driven each by its separate engine. By this arrangement either dynamo or either engine may at any time of the day be used for experiment or instruction, as is the case with the boilers. Students will have actual practice in the handling of the entire apparatus, and will be enabled to obtain a very considerable familiarity with the details and peculiarities of the systems of the principal American manufacturers. All the engines and dynamos will be mounted on very heavy foundations, so as to obviate to the greatest possible extent any jarring of the building. The only shafting in the building will be on the second floor, and will be very light, as it is only for furnishing power for testing in the mechanical laboratory rooms, which are to be situated on this floor.

On the third floor will be placed a drawing room, recitation room, office, and the electrical engineering laboratory, the latter occupying a space of 1600 square feet. On one wall a special switch board will be placed, so arranged that any or all of the dynamos can be connected at will with any measuring instrument or apparatus in the laboratory. It will be provided with a photometric room for measurements upon both arc and incandescent lamps, with many different types of which the department is supplied. The apparatus for electrical measurement is already quite extensive, and is continually and rapidly increasing. Each student is required to complete quite an extended course in elementary electrical and magnetic measurements; after which, if he is deemed competent, he will be given facilities for original research, either alone or in company with another student. The feeder wires both alternating and direct current, which convey the electrical energy from the dynamo room to the various buildings will be carried underground. The arrangement of the lamps in the buildings will be made by the architects, Wilson Brothers, who have also drawn the plans for the entire plant. The plant, when completed, will be under the

immediate charge of a superintendent, to whom the officers of the department act as advising and consulting engineers.

End of the San Francisco Strike.

The foundrymen in San Francisco, after a long struggle, have demonstrated their right to make rules for the conduct of their own business. A dispatch dated May 9 says:

Strikers in this city have been taught a lesson this week which they will remember. Fourteen months ago all the iron-molders in the city were called out because the foundrymen refused to accept an arbitrary number of castings for a day's work. The iron trade was seriously injured, as many contracts for work had to be sent East. After about two months the foundrymen proposed to compromise, but the strikers would listen to no reasonable terms. Then the strikers resorted to force, and one man was shot and several were injured. But the foundrymen grew more determined as time went on, and continued to import workmen from the East, with the result that nearly all establishments are now running on full time. This week the strikers proposed arbitration, but the foundrymen replied that there were no differences to settle. All that was left to the Iron Molders' Union, if it wished to settle the strike, was to instruct its members to apply for work. They would be given employment if there was work to be done. This is the heaviest blow trades unionism has ever received on this coast, for it virtually proves that any association of employers can win against the unjust demands of their men.

Haulage of Canal Boats by Locomotives.

At a meeting of the Railway Union in Berlin, Herr Wiebe described some experiments recently made on two lengths of the Oder and Spree Canal, $3\frac{1}{4}$ miles long in all, with a view to ascertain the best method of towing large boats. The submerged chain system is, he states, unsatisfactory, nor has the endless rope system of traction given entirely satisfactory results when practically tested during the course of the experiments, though a great many types of supporting posts and pulleys were tried. The difficulty encountered arose from the rotation of the rope as it moved onward, which tended to twist the boat painter about the rope, and the form of connection between the rope and the painter could not be depended on to stop this action. Further experiments were then made by attaching the rope to the center of gravity of a heavy towing car, running behind and drawn by a light locomotive, such as is commonly used in mines. If the rope is attached directly to the locomotive, trouble may arise from the side pull of the rope tending to overturn the engine. It is for this reason that the towing car was adopted in the experiments in question. This plan is stated to have proved satisfactory, and boats have been towed by it at the rate of from 10 to 12 feet per second (7 to 8 miles per hour), though a speed of 5 feet ($3\frac{1}{4}$ miles per hour) will, in general, be sufficient. The tension on the tow rope in starting three heavy coal barges was as much as 1764 pounds, but rapidly decreased as the boats gathered way.

An anti-trust bill passed by the House of the Illinois Legislature makes any combination of individuals, firms or corporations for the purpose of fixing the price or limiting the production of any article, commodity or merchandise a conspiracy to defraud.

Double Headed Rotary Shear.

The Trethewey Mfg. Company of Pittsburgh, Pa., have designed and built a double-headed rotary shear which is used to trim two sides of a sheet of iron or steel exactly parallel and in one operation. As will be seen from the accompanying drawing, it is arranged with a movable head, so that sheets of any desired width may be trimmed. The shaft passes through the bed plate, so that it is entirely out of the way. The machine is fitted with a table 12 feet in length, which passes through the shear to carry the sheets. There are also movable friction wheels placed on either side of the table for supporting wide sheets. Above each of the lower knives is a friction wheel which serves as a hold-down to keep the sheet on the knife and take out the buckles during the cutting. The knives are brought together by eccentric sleeves on the shafts, a device which the builders have had in use with success on other machines for trimming sheet and plate iron. By use of this it is impossible for the operator to get the shafts out of true. There are gauges on the slides on each head, which are not shown in the drawing, so that sheets or plates may be slit in two, and each head of the shear may be used independently for such work.

Rapid work can be done by putting the double-headed rotary shear in combination

the power at a working pressure of 160 pounds. The hold is divided into eight separate water-tight compartments, which will contain 950 tons of water ballast. The boat is fitted with a Worthington ballast pump, Williamson steering gear, and all the modern appurtenances of a first-class steamer.

New Ocean Greyhound.

The Furst Bismarck, the latest addition to the twin-screw fleet of the Hamburg-American Company, is now on her way across the Atlantic. She has a length of 500 feet, a width of 57½ feet and a depth of 50 feet from the upper deck to keel plate of 38 feet. The top of the masts is 133 feet above the promenade deck. The three funnels have a width of 12 feet and stand 56 feet above the promenade deck. The official register of the Furst Bismarck is 8500 tons. A solid longitudinal bulkhead, running through the vessel from upper deck to keel, divides the ship into two non-communicating halves, each of which is supplied with a complete set of machinery capable of propelling the big ship. Each half is subdivided into numerous water-tight compartments, which confine to one compartment alone any accident that may happen to the ship.

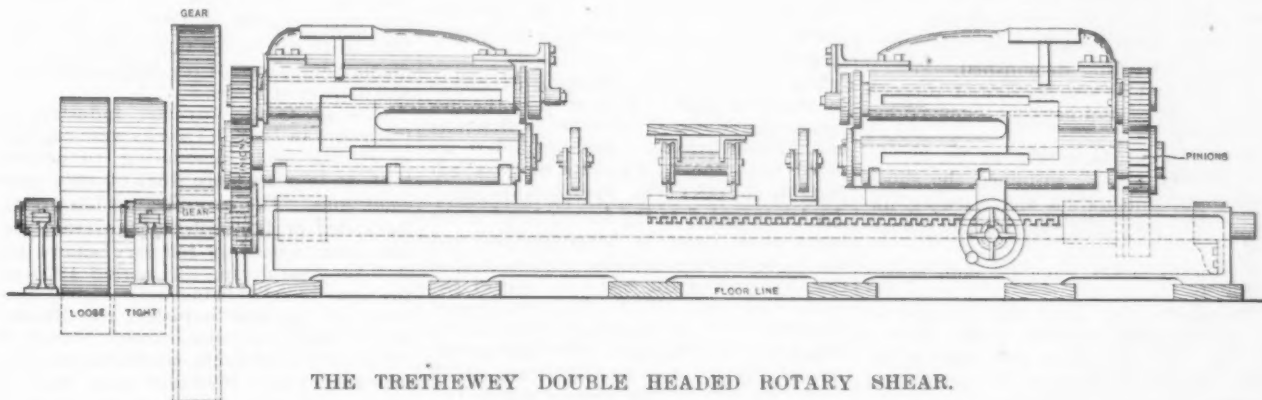
The Furst has two triple-expansion engines, each of 8000 horse-power. Her

There are numerous water-tight compartments, &c., and, though called coast defense vessels, there is no protection save the protective deck and coal bunkers.

High Pressure Steam Boilers.

In view of the great interest which is now being taken in the subject of carrying high steam pressures for compound, triple and quadruple expansion engines, the Babcock & Wilcox Company have prepared a list of high-pressure boilers which have been put out by their Glasgow factory. The list is confined to boilers working under pressures of from 175 pounds, the lowest, up to 300 pounds per square inch, the highest. Seventy-five of the boilers mentioned are working between 200 and 300 pounds.

In this country the Babcock & Wilcox Company have put out a large number of boilers at equally high pressures, among which are those built for the Wood Vulcanizing Company of New York City, which have been running at 235 pounds daily pressure for the last ten years. Another notable example is a battery of four 100 horse-power boilers which have been recently erected at the Baldwin Locomotive Works, Philadelphia, to carry 225 pounds daily pressure. A duplicate of one-half of this plant is now being erected for the Schenectady Locomotive Works,



THE TRETHEWEY DOUBLE HEADED ROTARY SHEAR.

with a guillotine shear in the following manner: Instead of using the table to carry the sheets or plates, rollers are placed on both sides and through the double-headed rotary, carrying the sheets to and through the guillotine shear to a bundling table. By this arrangement the sides of the sheets are trimmed by the double-headed rotary shear and the sheets are cut to proper length by the guillotine. It is stated that one of these machines has been in successful operation for the past year as a test before placing them regularly upon the market, so there seems to be no question of its taking a prominent place among the various machines for trimming sheet and plate iron or steel.

The handsome new steel composite steamship built at the Detroit Dry Dock Company's Wyandotte yards was launched the 2d inst. and named the E. C. Pope. She was built for the Dry Dock Navigation Company and will be used in the lake freight business. The new steamer is of steel, 334 feet 6 inches long and 314 feet on the keel. It has a beam measure of 42 feet and a depth of 24 feet. It will be propelled by a triple expansion engine having a 44-inch stroke. The cylinders are 23, 35 and 56 inches respectively in diameter. The propeller is a sectional one, 13 feet and 2 inches in diameter. Two steel cylindrical boilers, each 14 feet 3 inches by 11 feet 6 inches, will furnish

piston has a stroke of 5½ feet. She has nine double-ended boilers, placed in three separate compartments, each set having direct and independent connection with each of the engines. Besides the triple-expansion engines there is a smaller engine for the various purposes that the ship's service requires. An ingenious improvement is the placing of one boiler on the upper deck far above the water line. This can be connected with the pumps, so that in case of an accident disabling all the boilers below there will always be steam power for use at the pumps.

The Japanese coast defense vessel Hashidate was launched at the Imperial Dockyard, March 24. The first attempt to construct a large vessel of steel with high speed was in the Yacyama, a despatch vessel modeled after the French ship Milan. On her trial trip in 1890, on a three hours' run under forced draft, she made a mean speed of 20.75 knots, and attained as a maximum 21.5 knots. In the construction of steel vessels the material used is purchased in Europe, largely in France, with machinery principally from England. The large supply of iron to be had in Japan has not yet been worked into ship-construction material. The Hashidate and sister ships are of the following dimensions: Length, 295 feet 2 inches; beam, 50 feet 6 inches; draft, 21 feet 2 inches; aft displacement, 4300 tons.

and there are a very large number of plants of these boilers in the country running very close to these pressures.

Experience has demonstrated that these high pressures are not only practicable, but are economical if the engine plant is designed properly.

The Machinists' Convention.—The third annual convention of the National Association of Machinists was held in Pittsburgh during last week. The delegates were formally welcomed to the city by Mayor Gourley. The association was organized in 1868, with only a few members, and now has over 22,000 members enrolled. A local committee had charge of the arrangements for entertaining the delegates, and made their visit as pleasant as possible. Considerable business of an important nature was transacted, and the name of the association was changed from National to International, in order to cover the widening scope of the rapidly-increasing membership. The convention adjourned with a banquet on the night of the 8th inst.

The Canada and Behring Sea difficulties, together with several treaties on hand and complications in Chili, China, Hayti and elsewhere during the coming summer may prevent Secretary Blaine from taking his usual recreation at Bar Harbor.

Washington News.

(From Our Regular Correspondent.)

WASHINGTON, D. C., May 12, 1891.

Secretary Tracy has visited the Indian Head range for the testing of high power guns and returns well satisfied with its advantages. It is located about 30 miles down the river and therefore within easy access from the naval arsenal and gun foundry at this city, where these guns are being made. The river at Indian Head takes a long sweep, so that vessels in the river can be observed at a great distance, therefore obviating any risks of property and life. It is probable that the Secretary will adopt this locality for the test of range and accuracy as applied to real warlike uses of the high power breech-loading ordnance of the new navy.

The Bureau of Ordnance of the Navy Department has been engaged in another series of tests, at the naval proving grounds opposite Annapolis, of the three varieties of armor plates with which the Government has already made experiments. The plates measured the usual size, 8 feet by 6 feet by 3 inches, and were placed vertically against a heavy backing of oak timber supported in the rear by a compact embankment of earth. A Hotchkiss 6-pounder rapid firing gun with the regulation charge of powder was used, 20 shots being fired at 35 feet distance; computed velocity of projectile 1800 feet to the second. The results were as follows:

1. Plate, steel, broken into many fragments with backing demolished.
2. Steel and nickel, perforated through entire thickness and backing damaged but not broken.
3. Steel and nickel, same as No. 2.
4. Harvey nickel, sustained the shock with slight indentation and backing unhurt. The projectile was literally pulverized.
5. Harvey nickel, gave the same results as No. 4.

The results were decidedly in favor of the nickel plate treated by the Harvey process. All the plates were made at the establishment of Carnegie, Phipps & Co., of Pittsburgh. In their composition the highest quality of component materials and the most careful attention to the product was bestowed upon each plate.

The results in each case were so decisive that it does not require scientific investigation to reach conclusions upon their respective merits. The Bureau officers are observing considerable secrecy in their official opinions for the present, desiring to await the accumulation of a sufficient number of tests to enable them to formulate a scientific estimate which will form the basis of further advancement in armor plates and their composition if possible. It looks unofficially as if the Harvey plate holds the lead just now. The attention of ordnance experts is now being turned to projectiles. Those used in the recent tests were the best used by the Government at this time.

The tests, it must be understood, apply solely to 3-inch plates resisting 6-pounder projectiles from the Hotchkiss R. F. gun. What results may be reached by thicker armor and heavier projectiles will constitute another problem in high-power ordnance, projectiles and armor plates.

The gun foundry at this point is now working up to its full capacity in turning out guns of the different calibers for the new vessels of the navy. The second of the 12-inch guns for the coast defense vessel Monterey which the President witnessed launched during his brief sojourn in San Francisco last week is fast nearing completion, the jacket having been successfully placed. The first of these guns will be ready for her tests in June. The

time consumed in its manufacture will be less than six months. Considering this was the first gun of this large caliber, 12 inches, turned out at the foundry, some idea may be formed of the efficiency of the management of that national establishment.

A Compound Surface Condensing Beam Engine.

When the steamer Rhode Island comes upon the New York line between that city and Providence, R. I., again for the summer season, she may not appear to the casual observer very different from her last appearance save for the regular painting, freshening and reupholstering which every large passenger steamer requires and gets to keep it in the best condition, but a large amount of money has been spent upon her, overhauling, during the winter, and the result is a vessel which in engine power and general mechanical efficiency belongs in the front rank of the fine Sound fleet.

The most important part of the overhauling is the new compound surface condensing beam engine, built expressly to replace the old engine. The new engine develops 3500 horse-power, with 390 square feet of grate surface; its weight is less and it occupies the same or a little less room than the old one, which only developed 2000 horse-power and had a grate surface of 260 square feet. The engine was designed by Henry Lavrat, superintendent of the Morgan Iron Works, New York, and is the first engine of this particular type that has ever been constructed.

The high pressure cylinder is 64 inches in diameter and 7 feet stroke; the low pressure cylinder is 84 inches in diameter and 12 feet stroke. Both cylinders are fitted with the well-known Sickless' adjustable cut off. The low-pressure cylinder is connected to the forward end of the beam, as is usual in beam engines; and the high-pressure cylinder is connected to the after part of the beam in front of the connecting rod. With this arrangement the stress in the beam is distributed to the best possible advantage. The high-pressure cylinder is set on iron keelsons, which have been put into the steamer during the general overhauling, and the low-pressure cylinder is set upon the condenser.

The paddle wheels are 34 feet 2 inches in diameter. There are two independent air pumps and two independent circulating pumps, built by M. T. Davidson of Brooklyn, N. Y., and driven by a compound engine with cylinders 11 and 22 inches in diameter and 36 inches stroke. The new galleys frame is made of wrought iron plates, riveted together by angle irons. The frame is firmly secured to wrought iron keelsons. The cylindrical boilers, five in number, were built at the Morgan Iron Works. Three of these are double-ended, 20 feet long, with two corrugated furnaces in each end and two are single-ended, 10 feet long, with two furnaces in each. All the boilers are 12 feet in diameter, and are built for a working pressure of 100 pounds to the square inch. The aggregate grate surface is 390 square feet and the aggregate heating surface 10,000 square feet. There is a fire room, 10 feet 3 inches wide, between the single and double-ended boilers, and a forward fire room 8 feet wide. In addition to the main boilers there is a donkey boiler for supplying steam to all the steam pumps, hoisting engines and dynamos.

H. C. Frick, of coke fame, while in New York last week, spoke of the more friendly relations that will exist hereafter at the great coke ovens: "We will have nothing to do with outsiders," he said, "but propose to get closer to the men who work for us, if possible, so

that they may know that we are trying to do well by them, and so that we may know when they are being well done by."

The Russian Iron and Steel Industry.

From an official report just issued on the Russian iron and steel industry, during the ten years of 1879-88, we gather the following particulars: In 1888 there were under working in the entire Russian empire 612 iron mines, and iron ore was further raised from 149 lakes. Of the former no less than 522 were situated in the government of Ural, and of the latter, 132 in Finland. The total output of ore amounted to 1,381,000 tons, of which 42,000 tons were lake ore. Compared with 1887, there is an increase of 75,500 tons. Naturally, the Ural shows the highest output—778,000 tons. The number of foundries producing pig iron was 132, with 200 furnaces, producing 612,000 tons, of which quantity more than three-fourths was smelted with charcoal. Again, the Ural shows the largest output—nearly 400,000 tons. The largest make at one works was 50,000 tons—viz., by the foundries La Nouvelle Russie, in the government of Catherinoslaw, where, by the way, coke is solely used in the smelting. Compared with 1887, the make of pig has increased with 52,000 tons, or nearly 9 per cent. During the period 1879-88 the manufacture of pig iron in Russia has increased with 230,000 tons, or 54 per cent. Up to 1886 the increase was slow, amounting only to some 90,000 tons, but since then there has been a rapid progress. The greatest increase—41 per cent.—falls upon the district of Moscow.

Coming to the bar-iron industry, we learn that in 1888 173 works were engaged in it, the make amounting to 350,000 tons, an increase since 1887 of only some 4000 tons. The manufacture has greatly fluctuated in the different governments. The Russian bar-iron industry shows but slow progress during the period 1870-80, the total increase being only 81,000 tons. Like the bar-iron industry, the Russian steel industry advanced insignificantly in 1888, the manufacture amounting to 211,000 tons, or only 3000 tons more than in 1887. The production has decreased as much as 37 per cent. in Finland, on account of the standing still of the largest steel works in that country, but increased in other provinces. At the works of the well-known Muta-Bankowa Company, the increase of manufacture amounted to 3500 tons. During the decennial period referred to the manufacture of steel in Russia has fluctuated very much; for instance, 1880 shows a production amounting to 300,000 tons, whereas, in 1885 it had declined to 180,000 tons. Of the quantity produced in 1888, 1100 tons were made by casting, 2300 tons by puddling, 49,500 tons by the Bessemer and 154,000 tons by the Martin process, and 4100 tons by the Franche Comté process. The number of steel works in the country was 32. The manufacture of steel rails amounted to 61,000 tons. Finally, as regards the relations between the consumption and the iron required to be imported in Russia to cover the former, we learn that the country supplied in 1888 90 per cent. of the pig iron required, 85 per cent. of the bar iron, and nearly 96 per cent. of the steel. The report also contains a table which shows in the most striking manner the effect exercised of late years by the steady increase of duties in Russia, viz., a falling off of imports and increase of production, particularly as regards pig iron. Thus in 1879 the production of pig amounted to 420,000 tons, and the imports to 180,000 tons; whereas, after ten years of steadily increasing protection the relative figures were 612,000 tons and 73,000 tons.

Boiler Tube Tests.

Comparative boiler trials with plain and with the Serve patent ribbed tubes were recently made at the shipyard of Samuel L. Moore's Sons, at Elizabethtown, N. J. The trials were conducted by H. B. Roelker, consulting engineer, of New York. The results attained are condensed in the following table:

penetrate it, extract the heat from it and convey it to the surface of the tube, where it is wanted.

Charles W. Whitney of 81 Fulton Street, New York, is sole agent for these tubes in the United States and Canada.

The catalogue of the Dayton Malleable Iron Company, Dayton, Ohio, is limited to specialties which they control and

\$1,000,000 is in flour and breadstuffs, \$1,500,000 in provisions and dairy products, and the remainder miscellaneous manufactures.

A New Storage Battery.

The Weddell-Enty system of storage battery traction was tried on the Lehigh avenue line, Philadelphia, recently. The cell used in the Weddell-Enty system is the invention of Messrs Enty & Philips of New York, and differs radically from the modifications of the Faure (lead) battery, which are the usual type of storage cells. In the new batteries the active agents are the oxides of zinc and copper. The cell consists of a sheet-iron box lined with tin and thoroughly amalgamated to prevent the action of the alkaline fluid which is used. This box serves as one pole, and is in contact with a sheet of finely perforated sheet iron coated with tin and also amalgamated, which is folded upon itself so as to make eight or ten cells. In these cells are introduced the opposite pole, which is composed of copper. Copper wire is braided into a cord. About this a finer copper wire is braided, the interstices are filled with copper oxide, and an insulating but porous coating of cotton covers and protects the wire from contact with the iron. The braided wire is now coiled into plates of a size to fit the cells made by the perforated sheet iron, and are connected together by insulated wire. The fluid used is called the "zincate of potash," and consists of a solution of the oxide of zinc in potassa. The combination, it is stated, is formed by boiling the zinc oxide in a strong solution of potash.

When in position the first action of the battery is a primary one, the oxide of copper being reduced to metallic copper in a spongy form, while the oxygen attacks zinc plates placed at intervals in the cells, thus increasing the strength of the "zincate of potash." A current of electricity decomposes this compound and reverses the action, depositing metallic zinc on the sheet-iron plates and oxidizing the copper once more. On using the battery the alkaline solution which is left by the removal of the zinc acts on that metal and oxidizes it at the expense of the copper, and in this action generates a new electric current. The company claim the high efficiency of 80 per cent. of the original power from these batteries, and claim that they have an efficiency of 500 ampere hours. Each cell weighs about 30 pounds, and 100 are sufficient to propel a street car at any desired speed. The normal speed of the motor is about 550 revolutions per minute at a pressure of 80 volts. The dynamo and motor are also of novel construction. They are multipolar, with the armature outside of the field, and for both high efficiency is claimed. The company propose to engage in general electrical work, and will build a temporary factory at Bridgeport, Conn., where they expect to construct not only the dynamos, motors and storage batteries, but also the necessary mechanical devices required in electrical engineering.

Under the new convention with Spain the duty on flour from the United States is reduced from \$3.50 to \$1.50 per barrel, with the same reduction on corn. The tariff on dry goods and husbandry machinery will afford the United States no material advantage till 1892, because any privileges accorded will be shared equally by Great Britain, France, Germany and Belgium under "favored nation" treaties.

The strike at the Boonton Steel and Iron Works, Boonton, N. J., has been settled, and the strikers have returned to work.

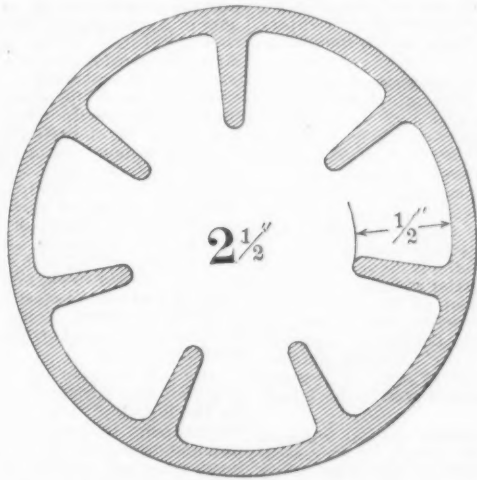
Pounds of coal per 100 pounds of water evaporated.

Draft.	Plain tubes.	Ribbed tubes.	Economy of coal. Per cent.	Increase in steam generated. Per cent.
Natural draft $\frac{1}{8}$	19.72	13.65	30.83	18.03
Forced draft $\frac{1}{8}$	16.7	13.21	21.08	30.97
Forced draft $\frac{1}{4}$	21.37	14.8	30.74	46.46

Increase by Serve tubes over plain tubes.	Total evaporation. Per cent.	Evaporation per pound of combustion. Per cent.	Extreme evaporation.
Natural draft $\frac{1}{8}$	18.03	57.54	8,460 pounds for plain tubes.
Forced draft $\frac{1}{8}$	30.97	32.68	14,000 pounds for ribbed tubes.
Forced draft $\frac{1}{4}$	46.46	46.84	Increase, 65.5 per cent.

These trials occupied 12 days, six with the plain tubes and six with the Serve ribbed tube. Each day's trial lasted eight hours; 32.35 pounds of wood and 150 pounds of coal were used to start the fire and to raise steam to 70 pounds pressure, after which the trial immediately commenced. Steam was kept at 70 pounds pressure, and the water level at 7 inches

manufacture. Among these may be mentioned the Dayton Freight Car Door Fastener, an article which is "standard" upon several prominent lines. It is illustrated both open and closed, also shown full size in the closed position. There are also included in the catalogue a very comprehensive list of malleable-iron castings which the company are making for some of the



THE SERVE RIBBED BOILER TUBE.

in the glass as nearly as possible, and both were at these points at the end of the trial. In the last day's trial alone steam was kept at about 100 pounds pressure in order to obtain the high draft and dry steam. The water level was also about 3 inches in the glass.

The soot scraped out of the plain tubes after the six days' trial was 2 1/2 pounds. That scraped from the Serve tubes after the six days' trial was 3 pounds.

The boiler used was a usual upright tubular of 42 inch diameter, with 36 inch furnace, 24 inches high, and 63 2 1/2 tubes 6 feet long, 7 square feet grate surface, 287 square feet fire surface.

The Serve tube is formed with longitudinal ribs, as shown in the accompanying drawing. The reason these tubes are so effective, especially in vertical boilers, is stated to be because the ribs "open up" the gaseous stream passing through the tube and develop the heat within it. They

principal railroads of the country. The works of the concern are very favorably located on the tracks of the Pan Handle road, just west of the center of the city. Great care has been exercised in their construction and equipment, and the very best results are secured in each of the several departments. Natural gas is used as a fuel.

Senor Soteldo, formerly Minister from Venezuela, and who has been a resident of Washington since he was relieved from that office, is authority for the statement that a treaty of reciprocity was concluded at Caracas on April 23 between Venezuela and the United States. At present the aggregate value of the merchandise annually received from Venezuela is about \$11,000,000, of which nearly \$10,000,000 is in coffee. The value of domestic products exported from the United States to Venezuela is about \$4,000,000, of which

The Westinghouse Electric and Mfg. Company.

Announcement is made that the Westinghouse Electric and Mfg. Company of Pittsburgh have at last perfected a plan of reorganization which, it is thought, will prevent the affairs of the company from passing into the hands of a receiver. The full text of the plan is set forth in the announcement printed below, which was issued to the stockholders under date of the 7th inst., from the Eastern office of the company, at No. 120 Broadway. It reads as follows:

OFFICE OF THE
WESTINGHOUSE ELECTRIC AND MFG. CO.,
No. 120 BROADWAY, NEW YORK, May 7.

To the Stockholders of the Westinghouse Electric and Mfg. Company:

Your officers have for some time been confronted with a condition of affairs which has kept the company upon the brink of a receivership, but having full confidence in the value of your property, and realizing the magnitude of the injury which would be suffered by the stockholders in case the creditors should force the company into a receivership or an assignment for the benefit of creditors, we have spared no effort to keep the business together and the factories in operation, pending the perfection of the plan of reorganization set forth in the annexed resolutions, which are made a part of this circular. We feel confident that if this plan meets with that immediate and unanimous co-operation on the part of the stockholders which is essential to its success, the credit of the company will be restored, and the business placed upon a firm basis. The following gentlemen who have not been identified hitherto with the management of the company have consented to become members of your Board of Directors in case the proposed reorganization is successful: Messrs. August Belmont, Marcellus Hartley, Henry B. Hyde and Brayton Ives, all of New York, and Messrs. Charles Francis Adams and Charles Fairchild of Boston.

The reorganization syndicate, certain creditors and others, have agreed to take at par \$3,000,000 of preferred stock upon the condition, among other things, that the stockholders assent to the plan of reorganization and return to the treasury of the company 40 per cent. of their holdings as provided in this plan. An opportunity will be offered to "assenting" stockholders to subscribe to preferred stock at par. We are confident that the stockholders will feel that the surrender of 40 per cent. of their stock as a part of the proposed plan will be a positive advantage rather than a sacrifice, for the following reasons:

1. The return of this proportion of the stock to the treasury will enable the company to pay, even without further additions to its property or business, an increase in dividends upon the remaining stock outstanding almost in proportion to the amount of stock surrendered, so that 60 shares of stock with the advantages resulting from the completion of the proposed plan will be more valuable than 100 shares without the surrender.

2. The "assenting stock" will be entitled to a 7 per cent. annual preferential dividend before any dividend is paid on such stock as may not assent to the plan.

3. The issue of preferred stock rendered possible by the surrender of a part of the common stock will enable the company to care for its floating debt and provide working capital.

4. Treasury stock is provided wherewith to purchase additional property in the shape of the stocks of the United States and Consolidated companies, which purchase will greatly strengthen the company.

5. When the plan above referred to is carried out, there would still remain in the treasury of the company a substantial amount of both preferred and common stock for other purposes.

As a failure of the stockholders to join promptly and with practical unanimity in the proposed plan would render a receivership or an assignment for the benefit of creditors or other legal proceedings inevitable, it is proposed that the Reorganization Committee, consisting of Messrs. August Belmont (of August Belmont & Co., bankers, New York); Charles Fairchild (of Lee, Higginson & Co., bankers, Boston); and Brayton Ives (president of the Western National Bank, New York), shall in the event of a failure of the plan above referred to continue to represent and act for so many of the stockholders as shall become parties to the reorganization agreement, thus by unanimity of action through experienced gentlemen affording to the assenting stockholders a manifest advantage in any effort to reorganize.

With these ends in view, a reorganization agreement covering the above plan, and such other plan as the Reorganization Committee may deem it wise to adopt if the above plan fails, has been executed in triplicate by the Mercantile Trust Company, by the Reorganization Committee above referred to, and by the holders of a considerable amount of the capital stock of the company. One of these executed reorganization agreements is at the office of Messrs. August Belmont & Co., 130 Broadway, New York City, and another at the office of the Westinghouse Electric and Manufacturing Company, at Pittsburgh, Pa., and another at the office of Messrs. Lee, Higginson & Co., Boston, Mass., at either one of which places, and at the company's office in New York City, you can obtain full information regarding the affairs of the company and its proposed reorganization.

You can become a party to this reorganization agreement either by executing any one of these original agreements and sending your stock to the Mercantile Trust Company or simply by assigning to and depositing with the Mercantile Trust Company of the city of New York your certificates of stock or your trustees' certificates for stock as the case may be. Upon receipt of your certificates the Mercantile Trust Company will issue to you its negotiable receipt for the shares so deposited by you, which shares will be disposed of by the trust company in accordance with the instructions of the reorganization committee under whatever plan they may adopt. By order of the board,

GEORGE WESTINGHOUSE, JR.,
President.

The following is a copy of the resolutions of the board of directors of the Westinghouse Electric and Manufacturing Company, adopted on April 7 last and referred to in the foregoing circular:

Whereas, The Westinghouse Electric and Manufacturing Company, as shown by its balance sheet of March 31, 1891, has a floating debt of \$3,303,611.45, and in order to meet its pressing obligations and to obtain sufficient working capital for the conduct of its increasing business it is essential that it should obtain capital to the amount of \$4,000,000; and

Whereas, The financial condition of the company is such that unless such amount can be obtained in the immediate future a receivership of the company and its property, or a general assignment for the benefit of creditors, is, in the judgment of this board, inevitable; and

Whereas, The varied interests of the company, and the number and nature of its outstanding obligations are such as to make the ultimate result of a receivership or a general assignment, so far as interests of the stockholders are concerned, very uncertain; and

Whereas, For many months past this board has used its best efforts to obtain extensions of its indebtedness and to procure the additional money essential for the prosperous continuance of its business, which efforts have met with only temporary and partial success; and

Whereas, The president of the company reports to its Board of Directors that after consultation with responsible bankers he has every reason to believe that the following plan for the relief of the company can be carried to a successful result, if approved by this board, viz.:

1. The present authorized capital stock of the company (\$10,000,000) not to be increased.

2. The present holders of the outstanding common stock of this company to assent to this plan and to transfer and surrender to this company, or its order, to be used for the purposes hereinafter specified, 40 per cent. of the par value thereof (aggregating about \$2,720,000), which, with the treasury stock now unsold, would make an aggregate of about \$5,920,000 of unsold treasury stock.

3. The 60 per cent. of stock retained by the assenting stockholders, together with the 40 per cent. surrendered, to be stamped "assenting stock," and to be entitled to a preference over the "non-assenting" stock in that no dividend shall be paid upon the "non-assenting" stock in any one year until after 7 per cent. dividends shall have been declared and paid in that year upon the "assenting stock."

4. One million dollars par value of the common stock so surrendered to be converted into preferred stock, which, with the \$3,000,000 of preferred stock now authorized, but unissued, shall constitute an authorized issue of \$4,000,000 of preferred stock entitled to a 7 per cent. annual preferential cumulative dividend and also to a pro rata share of dividends declared in any one year after 7 per cent. dividends shall have been paid in that year upon the other stocks outstanding, the entire \$4,000,000 of preferred stock to have a preference in the assets of the company, but no part of the issue to have a preference over any other part thereof either as to dividends or assets. The

remaining stock surrendered, amounting to about \$1,920,000 to remain common "assenting stock."

5. The said treasury stock, both preferred and "common assenting stock," to be used for following purposes, viz.:

(a) Three million dollars par value of the preferred stock to be issued for money and in the payment of the company's debts.

(b) Five hundred thousand dollars par value of the preferred stock to be left in the treasury of the company to provide further working capital when needed, and to meet other requirements of the company.

(c) So much as is necessary of the remaining treasury stock to be used in the purchase of as many shares of the capital stocks, respectively, of the United States Electric Lighting Company and the Consolidated Electric Light Company as the reorganization committee hereinafter named deem advisable.

(d) The remainder of the treasury stock not used for the above purposes to remain in the treasury of the company for future use.

6. This plan to be executed and carried out through a reorganization committee composed of August Belmont of August Belmont & Co., bankers of New York; Charles Fairchild of Lee, Higginson & Co., bankers of Boston, and Brayton Ives, president of the Western National Bank, New York, who shall have power to add not to exceed two members to and fill vacancies in their own number.

7. The reorganization committee to be entitled to a substantial representation in the management of the company.

And whereas, In the judgment of this board of directors the method proposed by this plan is the only one by which the company can be successfully relieved from their financial embarrassments and be saved from a receivership or a general assignment for the benefit of their creditors and be supplied with sufficient working capital to conduct their business; and

Whereas, The successful carrying out of this plan absolutely depends upon the surrender to the company by the stockholders, for the purpose of said plan, of 40 per cent., or approximately \$2,720,000, par value of the common stock of this company now held by its stockholders.

It is Resolved, That this Board of Directors recommend to the stockholders the approval of the foregoing plan, and further recommend to the stockholders that they shall surrender for the purpose of said plan 40 per cent., or an aggregate of approximately \$2,720,000 par value of the capital stock of the company held by them. And this board further recommends to the said stockholders that they authorize the officers and directors of the company to carry out said plan and to issue the whole or any part of the said \$4,000,000 of preferred stock and any part of said common "assenting" stock for money, stocks of other corporations, for the payment of the debts of the company and otherwise as they may deem for the best interests of the company in pursuance of said plan, and that, by a proper resolution, said stockholders shall declare said preferred stock as and when issued to be fully paid stock, and the said preferred stock as and when issued by the officers of this company is hereby declared to be fully paid and not subject to further or future calls or assessments.

And it is further resolved, That said plan and the same hereby is adopted and approved by the Board of Directors, and the officers of the company be and they hereby are authorized and directed to carry out said plan, and to incur on behalf of the company such liabilities and expenses and to pay such sums as they shall deem proper for the carrying out of said plan, and to do every act and thing necessary therefor.

As yet sufficient time has not elapsed to learn whether the above announcement will be favorably received by the stockholders or not. The proposition that 40 per cent. of the holding of common stock be returned to the company may meet with considerable opposition. In case the proposition is accepted it is stated that about 500 more men will be given employment in the shops of the concern at once. For some time past the firm have been working only about one-third the usual number of hands. The annual meeting of the stockholders of the company will be held in the Westinghouse Building, Pittsburgh, on Monday, the 18th inst., at which time it will no doubt be known whether the efforts of Mr. Westinghouse to place his company on their feet again have been successful. He is certainly to be commended for the efforts he has made to keep their affairs out of the hands of a receiver.

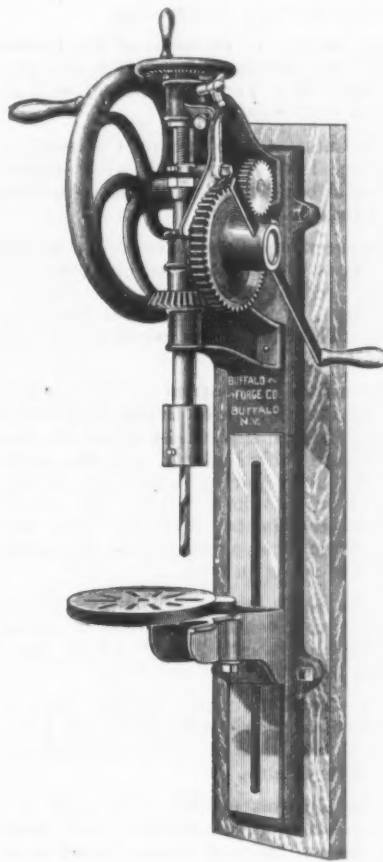
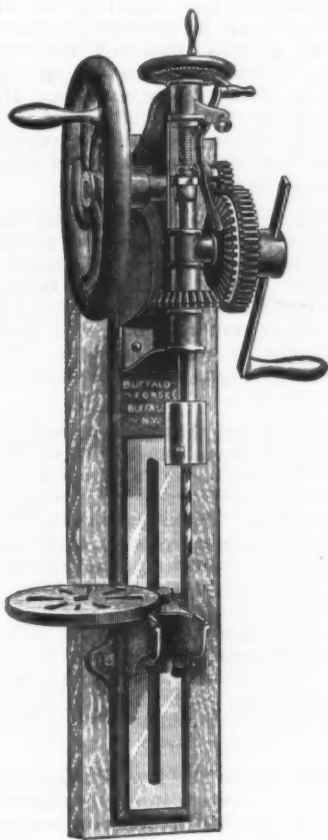
The Buffalo "66" Drill.

This new drill has been especially designed for the blacksmith trade by the Buffalo Forge Company of Buffalo, N. Y. Though sold at a low price it is by no means a cheap machine. In design it is very neat, while in service a more efficient and durable drill could not be secured. Its weight is 100 pounds, and length 37 inches; its drilling capacity up to 1 inch diameter, and to the center of a 15-inch circle. It has an automatic feed, with a run of 3½ inches, which is adjustable for three feeds. There are two rates of speed. The distance from the lowest point of the table to the spindle is 16½ inches, and the table is 8 inches in diameter. As the engravings show, a hand wheel is provided for the quick return of the spindle. Each machine is furnished with a wrench, and the chuck

so arranged that in case of fire or panic the unfortunates cannot throw themselves over, but must perforce descend to the ground in safety. This notable work is from the shops of E. T. Barnum, Wire and Iron Works of Detroit, Mich. We understand that other public institutions of the kind are to follow the example of Pontiac Asylum. It should be a matter of law that all public places of this kind be so protected, in the interests of humanity and for the prevention of the awful loss of life, which so often occurs when these places suffer from fire.

Imports of Mexico.

The figures of the imports into Mexico in detail, which have just been prepared by the Bureau of Statistics of the Treasury



THE BUFFALO "66" BLACKSMITH DRILL.

is regularly made for ¼-inch drill shank. The same tool is gotten out for shops provided with power; then it has tight and loose pulleys.

According to the Boston *Transcript* the production of paper in the entire world is estimated to be 3,000,000,000 pounds per year. There are 884 paper mills and 1106 paper machines in this country. Germany has 809 mills and 891 machines; France, 420 mills and 525 machines; England, 361 mills and 541 machines; Scotland, 69 mills and 98 machines; Ireland, 13 mills and 13 machines; Russia, 133 mills and 137 machines, and Austria, 220 mills and 270 machines.

Probably the Eastern State Asylum for the Insane at Pontiac, Mich., is now one of the best protected institutions in the country in the way of safeguards for the escape of the inmates in case of fire. The entire institution has been provided with improved iron balcony fire escapes, embodying a novel feature in being inclosed entirely with guards of wire work

Department for the year ending June 30, 1889, are even more valuable than the aggregate statistics printed some time since. These figures show that while the United States leads all other countries in her share of Mexican trade, she is behind some of them in a few articles and closely pressed in other articles. England exports to Mexico \$383,946 in linen and hemp goods, while the United States exports but \$80,804. In woollens France stands first with exports to Mexico of \$560,276, while Germany and England enjoy a large share of the traffic. The United States is pre-eminent in her cotton exports, but even in these England has a large share. The percentage paid on dutiable goods imported into Mexico was 84.7 per cent. ad valorem. The total value of the dutiable goods imported was \$26,518,664, and of free goods \$13,506,230. The following tables will show the imports in detail from the United States, England, France and Germany for the year ending June 30, 1889:

Articles.	United States.	Germany.
Free goods.....	\$10,293,301	\$299,136
Cotton goods.....	3,834,784	357,593

Linen and hemp goods..	80,804	120,909
Woollens.....	380,108	244,138
Silks.....	72,857	27,153
Silk mixtures.....	48,619	43,778
Food products.....	2,115,088	160,030
Stone and earthenware..	26,287	7,715
Glass and china.....	243,033	164,317
Gold, silver and platinum.....	36,722	114,161
Iron and steel manufactures.....	815,225	227,516
Copper and its alloys....	261,418	129,093
Tin, lead and zinc.....	20,771	27,302
Small wares.....	236,454	204,891
Machinery and apparatus.....	436,736	30,813
Carriages and materials for.....	191,664	1,965
Arms, powder and ammunition.....	200,914	15,536
Wood and its manufactures.....	301,640	98,239
Paper and manufactures of.....	378,395	218,394
Skins and goods of leather.....	188,817	68,035
Medical drugs.....	1,184,809	109,182
Miscellaneous.....	1,320,951	172,727

Totals.....	\$22,669,420	\$2,842,932
Articles.	France.	England.
Free goods.....	\$522,379	\$2,050,826
Cotton goods.....	480,883	2,708,341
Linen and hemp goods..	65,007	383,946
Woollens.....	560,376	364,390
Silks.....	228,312	27,806
Silk mixtures.....	269,201	27,097
Food products.....	1,144,353	57,032
Stone and earthenware..	26,366	1,088
Glass and china.....	159,785	16,225
Gold, silver and platinum.....	152,148	687
Iron and steel manufactures.....	107,050	337,595
Copper and its alloys....	131,943	66,857
Tin, lead and zinc.....	15,150	10,843
Small wares.....	144,811	24,582
Machinery and apparatus.....	28,594	3,461
Carriages and materials for.....	18,814	415
Arms, powder and ammunition.....	8,717	7,034
Wood and its manufactures.....	39,436	7,124
Paper and manufactures of.....	228,833	32,528
Skins and goods of leather.....	140,836	10,443
Medical drugs.....	269,324	88,545
Miscellaneous.....	414,240	51,018

Totals.....\$4,956,568 \$6,337,980

Note.—The bulk of machinery is under the head of "Free goods."

Some idea of the quantity of goods which escape enumeration by our customs officials, because of defective laws for recording exports by rail, may be gleaned from the returns of the imports by way of Paso del Norte and Laredo. The figures given by the Mexican officials are \$5,793,960 for the importations at the former place, and 5,728,029 for those at Laredo. Many of our exports by the Mexican Central and International railways cross the frontier without any record by our customs officers because they pay no export duties. The statistics furnished by the Mexican officials are presumably correct, because it is their duty to collect customs duties upon them.

Albany has several large brass foundries, but the largest is the one that has recently been fitted up by Sullivan & Ehlers, opposite their iron and boiler concern, at the corner of Broadway and Westerlo street. The new foundry has been built to manufacture the sewer trap recently patented by William E. Delehanty. The foundry and engine room is 130 feet long by 35 feet wide, and will turn out about 4000 traps a week, employing about 25 men. This is but the beginning of the Delehanty Mfg. Company, it having only been organized since October last. Jas. B. Lyon is president of the company, with Jas. H. Carroll, vice-president; Thos. A. Stuart, secretary and treasurer; William E. Delehanty, manager and superintendent. The board of directors consists of James B. Lyon, James H. Carroll, Thos. A. Stuart, William E. Delehanty and M. V. Dolan.

THE WEEK.

The employment of "special" Treasury agents in the collection of the customs revenue at this port is a measure of doubtful expediency, in the opinion of the New York Chamber of Commerce, and will be inquired into.

The Canadian papers say that the owners of wood-pulp timber in Canada are anxious for reciprocity, in order that they may get into the Maine and other New England markets with the products of their pulp mills. The American tariff prevents Canadians sending the pulp, but places no duty on the unmanufactured wood. The result is that the Americans are buying up thousands of acres of timber lands in the upper provinces and shipping the wood across the line.

The lowest rate on record, 5 cents a bushel, is being charged for carrying wheat from Chicago to New York. The grain goes by the lakes to Buffalo, thence to tidewater by the Erie Canal. Of the 5 cents, the lake boats get 1½ cents, the Buffalo elevators ½ cent and the Erie Canal boats the remainder.

The largest deposit of sulphur on this continent is said to have been discovered in the Cocopah mountains, 75 miles southwest of Yuma, Cal. It is 1100 feet long, 60 feet wide and 40 feet through.

The Buenos Ayres *Standard* estimates the Argentine public debt at \$573,900,000, of which \$322,500,000 is foreign. The gold dollar has recently been quoted as worth \$300 in currency.

The Pennsylvania Railroad Company have in their employ 64,282 men.

It is now definitely known that the Manchester ship canal will cost at least 33 per cent. beyond the original estimate, notwithstanding no unexpected engineering difficulties have been met with. The financial problem is now the most serious.

Russia and the United States are growing away from other nationalities in point of population. During the last ten years the population of Russia has increased 15,000,000, and that of the United States 13,000,000. In Germany, where the rate of increase is larger than in other European countries, the gain in ten years has been 4,200,000. It should be remembered that the area of Russia is two and one-half times as great as the area of the United States, and that the gain of 15,000,000 persons is predicated upon a population of 90,000,000 ten years ago, when the population of this country was a little in excess of 50,000,000. On the other hand, however, the growth of population in the United States is accelerated by immigration to a very considerable extent.

The Chilean insurgents attempted to make the port of San Diego, in California, a base of operations, in violation of the neutrality laws, by dispatching the steamer *Itata* to that port for a cargo of arms which had arrived from New York, to be transferred from an American sailing vessel. The insurgents having no legal status, not being recognized even as belligerents, the *Itata* was an outlaw which the Chilean Minister at Washington asked to have detained. The American admiral on the Southern Coast is expected to effect her capture if possible, giving rise to interesting questions in diplomacy.

The Peruvian Minister to the United States, when in New York a few days ago, expressed confidence in the future prosperity of that republic. Public peace with its attendant prosperity is assured. The general effect of what is known as the "Grace Contract," providing for the cancellation of debts, has been beneficial. By

its operation the credit of Peru has been completely re-established. The Government now seeks to enlarge the commercial relations of the country, and to this end it is contemplated to reduce the customs duties.

The subject of rebuilding Lynn, the shoe city of Massachusetts lately destroyed by fire, was the occasion of a meeting of property owners a few days ago to hear practical suggestions respecting fire-proof construction. Edward Atkinson said there is no such thing as a fire-proof building, as the contents constitute the element of danger. The iron girders are expanded by heat, and the result is collapse. He therefore advocated the use of timber and brick and cited the Electric Welding Company's building as an example. The latest idea in mill construction is, he said, that the walls hold up the building, instead of the building holding up the walls. Fire Commissioner Fitch of Boston opposed the rage for lofty construction.

Col. George L. Gillespie of the United States Engineer Corps gives it as his opinion that New York City cannot be bombarded from Sandy Hook.

The Cataract Construction Company, at Niagara, have contracted with parties who will build the largest paper-making plant in America.

Engineers and firemen employed by the New York Central Railroad Company will be required to undergo a competitive examination, by answering about 260 questions. The idea is not popular with the K. of L.

The arrival in Montreal of the passengers by the *Empress of India* from Yokohama, after a trip of 14 days, via the Canadian Pacific Railway, was the occasion of much rejoicing in that city, as they were claimed to have broken the record for trans-continental journeys. The trip from Japan was made in ten days and from Vancouver in four.

In the South there are nearly 200 cotton-oil mills, representing a capital of about \$20,000,000, nearly all of which have started within the last ten years.

The Canadians will complete the enlargement of their canals via the St. Lawrence River from 12 to 14 feet without unnecessary delay.

Philadelphians exhibit with pride the various products of skilled labor from their manual training school, which were recently shown in Boston.

It is asserted in Chicago that Gould's lines have secured all the refrigerator-car traffic from that point eastward through an arrangement to take effect on the Missouri Pacific and the Wabash and the Canadian Pacific railroads. The Erie line forms the Eastern terminus of a route comprising 30,000 miles.

A member of the Canadian Parliament from Nova Scotia who recently visited Washington City as a representative of the Liberal party made a speech at Ottawa in which he asserted that it is idle to talk of any treaty with the United States that would not admit a free interchange of products, including the products of American labor, and intimated that the closest possible trade relations could alone avert serious trouble in the future.

A plant for the manufacture of coal briquettes for fuel has been completed in Milwaukee similar to that operating in Pennsylvania.

The erecting of new buildings has been carried to such excess in Philadelphia that to avert financial troubles the trust and investment companies of the city have united to restore equilibrium between demand and supply. Several trust companies have positively refused to advance more

money, and have established a uniform scale of prices for insuring the completion of operations built with money advanced by individual money lenders at rates considerably higher than those charged in seasons past.

A London dispatch says that Sir Charles Tupper has been appointed director of the Water Works and Gas Works Securities, a corporation which has just been organized with a capital of \$10,000,000, to buy up the water works and gas and other works of the kind in Canada and the United States.

Retribution is about to overtake the officers of the short-term endowment societies in Philadelphia which have filched thousands of dollars out of the pockets of the unsuspecting. There was general alarm among the incorporators, those who figured in the management of the short-term orders, when it became known that the State Commissioner of New Jersey, under instructions from Governor Abbett, had ordered legal proceedings instituted against all persons connected with the swindling organizations, so far as the jurisdiction of that State extends. His orders were sweeping, including not only the supreme officers, but the organizers, local secretaries and agents who had solicited members to join.

A rebellion in Honduras is among the latest indications of discontent among the turbulent people of Central America. On the part of San Salvador and Guatemala contradictions of hostile intent and declarations of mutual good will have been frequent for several months. The chances in Nicaragua are not favorable to canal construction.

A significant announcement is made by the Mexican Minister, Romero, in a volume just printed, containing a summary of correspondence and proceedings between the governments of Mexico and the United States relative to a reciprocity treaty between the two countries. The subject, he says, is in abeyance; that work on a new treaty will be diligently prosecuted so that a draft may be finished in readiness for presentation to Congress in December. The volume, it is expected, will aid in promoting unanimity of public opinion in Mexico as well as in the United States.

The State Department at Washington has received a dispatch from our minister at Lisbon announcing the issue of a royal decree fixing the duty on foreign wheat at 10 reis a kg., and removing all the restrictions imposed by the decree of August 29, 1889, on the sale of wheat in the open market. This is a reduction in the duty of 6 reis per kg., and as far as American exporters are concerned the removal of the restrictions is of equal importance to the reduction in the rate.

Another republic is in an embryonic state on the East Coast of Africa to be called the "Republic of the North." The region referred to comprises a large territory in dispute between Great Britain and Portugal, lying to the west of Matabaland, and extending north to Zambesi River, and which the Dutch Boers threaten to invade with 20,000 men, the same who formerly inflicted severe losses upon British troops in the Transvaal. The leaders include men of position from both the Free State and Cape Colony. The Boer movement is, therefore, regarded as an attempted northward expansion, bound to conflict with the claims of the British chartered company, to say nothing of the claims of the Portuguese South African Company. The new republic, it is said, will be founded on the constitutional laws of the South African republic, and is expected to attract influential men from all parts of South Africa.

The Iron Age

New York, Thursday, May 14, 1891.

DAVID WILLIAMS, - - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, - - - EDITOR.
GEO. W. COPE, - - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS - - - HARDWARE EDITOR.
JOHN S. KING, - - - BUSINESS MANAGER.

Effects of the Connellsville Coke Strike.

The strike of the Connellsville coke workers will rank in industrial history among memorable labor troubles. When it was precipitated early in the month of February the iron trade was strongly inclined to welcome it as offering a source of relief to an overcrowded iron market. It was felt that in no other way could a wholesale restriction of pig iron production be so effectually secured. A month of complete idleness by the coke ovens was expected to accomplish much in the way of stiffening the drooping iron market, while the continuance of the strike for two months would be a special stroke of good fortune that was altogether beyond the dreams of hope. The privations of the striking workmen and the sufferings of their perhaps starving families received due share of comment, but it was taken for granted that the men had provided to a considerable extent for a contest of endurance, and fully realized what was before them. A peculiar feature of the situation was the rumor prevalent that the coke strike was being engineered by prominent iron and steel manufacturers, and that it would be summarily ended whenever their purposes had been served. This surmise, however, has been proved by events to be wholly unfounded, and was most unjust to the manufacturers referred to, as their operations have been as badly crippled as those of any of their competitors on account of the short supply of coke. A somewhat more distressing statement which has found acceptance by many is that the strikers received subsidies from some iron manufacturers who believed that their interests would be advanced by embarrassing the coke makers. At least one iron manufacturer has frankly stated that he had furnished the men with sinews of war.

The prolongation of the strike for three months without any prospect of its abandonment by the men is not only surprising to the iron trade, but is attended with unforeseen circumstances. Apparently the strikers are now as determined as when they first went out. A collapse may, of course, occur at any day, but the attempts of the operators to start their ovens with new men have been attended with only partial success, and at their present rate of progress it will be weeks and perhaps months until activity in the production of coke is fully restored in the Connellsville district. In numerous instances imported workmen have been induced to desist from taking the places

of the strikers. Public sympathy is being enlisted in behalf of the old force of workmen through the reports that they are being replaced by a class of less desirable people, and subscriptions are being made to the support of the strikers as far west as Chicago. The bituminous coal miners regard the coke workers' strike as their own cause, and one of the principal reasons for abandoning their own threatened strike on May 1 was the fact that all the funds that could be raised were needed to assist the Connellsville men. It has proved to be in every respect a much more formidable labor movement than had been anticipated by any one.

The most remarkable circumstance connected with this strike and its consequent restriction of iron production is the fact that until very recently it had no effect on the price of coke pig iron, and even now the only advance made is in the price of Bessemer pig iron in the vicinity of Pittsburgh. It had been expected quite generally when the strike began that its duration for one month would cut heavily into stocks of pig iron at the furnaces; that its continuance for two months would cause a decided scramble among Western iron consumers for a sufficient supply to meet their daily requirements; and that a three months' strike would mean a positive famine. But the prophecies in this direction have all proved false. The Western demand for iron has been easily supplied from one source or another, and while sellers have had some trouble in filling specific contracts, the consumers have so far made no complaint of the scarcity of iron, nor have they been obliged to pay more, except for Bessemer pig at Pittsburgh, as above stated. The greatest inconvenience resulting from the strike has been suffered by the Western foundrymen in securing a supply of coke for melting iron. They have latterly been compelled to substitute coke from other localities, and complain that they have much difficulty in operating their cupolas, because the quality of the coke secured is much inferior to that of Connellsville coke. This may, however, arise from their long use of Connellsville coke and their unfamiliarity with the characteristics of other cokes. Furnacemen who are using West Virginia coke seem to be able to obtain good results with it, although they state that it will not bear a burden so well as the Connellsville product.

The early termination of the strike and the general resumption of work in the Connellsville district are now greatly desired by Western iron interests, as it is believed that the time is near at hand when the demand for iron will revive, and furnacemen and foundrymen are anxious to be prepared to take advantage of it. Scarcity of coke in such an event will cause serious inconvenience to most important business interests. The Connellsville coke producers will further have a most pressing incentive to settle the dispute if they desire to retain their hold on the trade of the Northwest. This is the early completion of a line of railroad now building to connect the Pocahontas coke region with

roads running to Chicago. It is now reasonably certain that before the month of May has ended Pocahontas coke will be available by the furnacemen and foundrymen of the Northwest.

Labor and Law.

Recent legal cases before the courts and State boards of arbitration afford glaring instances of mismanagement on the part of labor leaders of difficulties intrusted to their charge by pliant followers. Thus the cause which they espouse is brought into disrepute and the methods employed tend to exasperate without securing the desired redress. A signal instance is afforded in the case of Barondess, the chosen leader of the Cloakmakers' Union, representing a class of workers ranking far below the average in intelligence, being ignorant of all law beyond the orders from the particular organization in which they are enrolled. Although violent collisions with the police had frequently occurred in the street, arising from some trivial cause, Barondess scarcely came into notice until he was recognized as the supposed instigator of several assaults, usually with non-union workers, culminating in an attack by a score of men upon a family at Jamaica, L. I., where Greenbaum's child was burned with vitriol and goods were destroyed. The victims thus learned that they were not safe at a distance from the city, despite attempts to escape. Another establishment at Corona previously had been wrecked under like circumstances. Several of the defendants accused of burglary were put on trial before Judge Garretson, but of four indicted Reingold alone was declared guilty. Some of the evidence implicating Barondess in extortion and conspiracy was interesting, but it was not until he was arraigned at Jefferson Market, in this city, on the charge of extorting money from the employing manufacturers, Popkin & Fiskel, with the object of settling a strike—one of various amounts received from them and other firms in the trade—that he was sentenced to Sing Sing for one year and nine months.

It would seem to the casual reader that the evidence was conclusive, the verdict just, and that the chief labor leaders would hasten to repudiate responsibility for the acts committed. Surely these officials, chosen for their knowledge of men and affairs, would promptly purge themselves from taint of sympathy with such excesses. So far from this, President Gompers of the American Federation of Labor lost no time in calling a sympathetic mass meeting at Cooper Union, to protest against the conviction, and the whole mixture of Anarchic elements was represented there to help on the chorus. And all this frenzy, be it observed, was because the leader of the Cloakmakers' Union had been convicted of coercing manufacturers into the payment of money to save themselves from the consequences of a strike. This time the strike was on the other side, for the judge had stricken

at the root of a system that has grown to monstrous proportions.

In this matter of extorting money the same issue was presented in the clothing cutters' lockout at Rochester, and no less a person than one Hughes, a member of the Executive Board of the Knights of Labor, is caught in the toils, awaiting the action of the courts. It was in his behalf that the Central Labor Union, a few days ago, passed a resolution to abolish the conspiracy laws of New York, the plea being that "By prompt action on your part you can save the officers of National

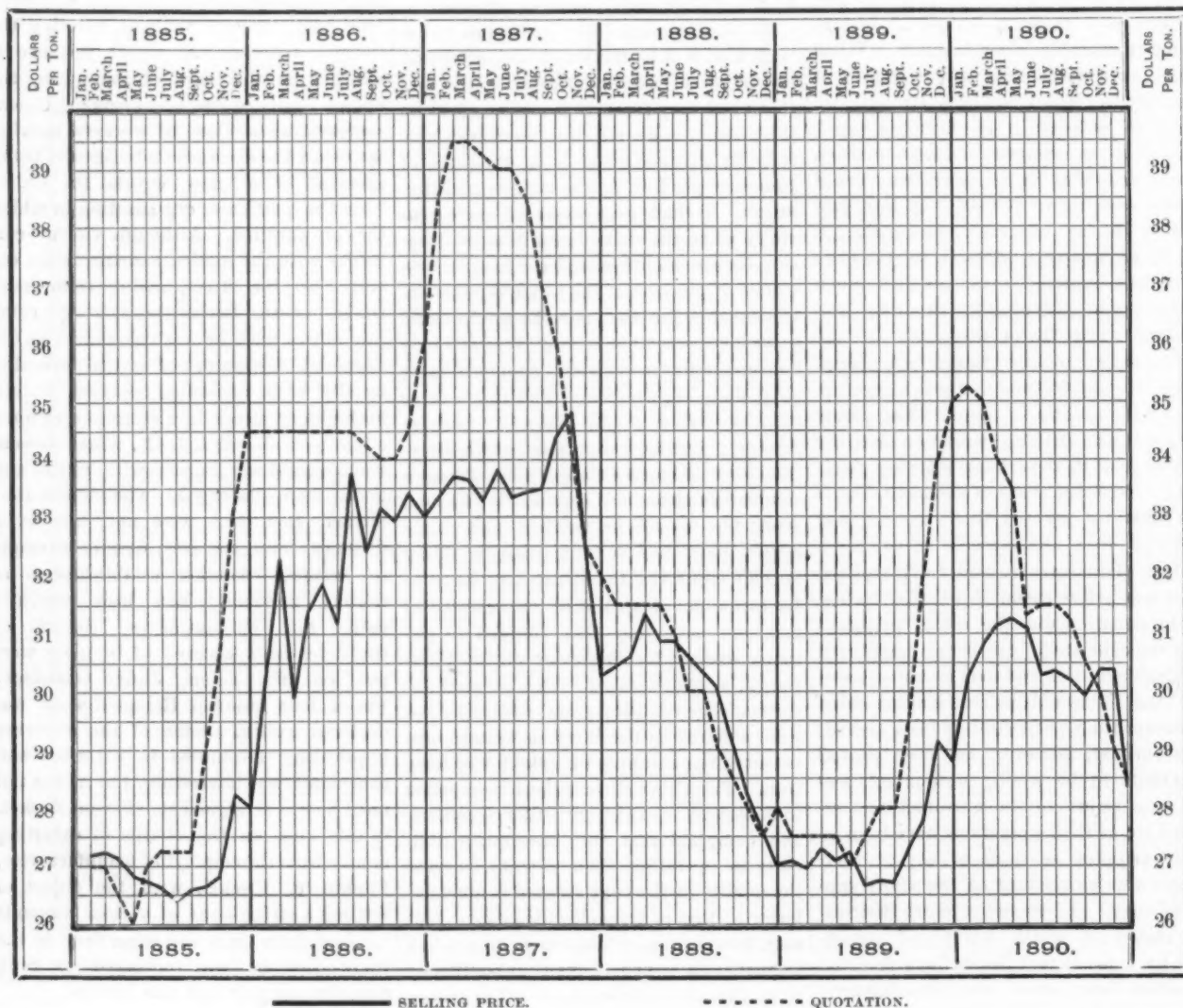
if not necessary. The legal barriers that exist to-day must remain substantially as they are, being fundamental to the system of government under which all have prospered, and those who would educate the ignorant masses to a contempt for law engage in a business as profitless as it is execrable.

Selling Prices and Quotations of Steel Rails.

Some time since a controversy arose between the managers of a large steel works and their men on the proper basis

the position to place before the readers of *The Iron Age* in the accompanying chart figures taken from the books of a large rail mill, showing monthly what were the average selling prices of the rails produced over a series of six years. The full line shows these fluctuations, while the dotted line represents the average monthly quotations, taken from the annual reports of the American Iron and Steel Association.

A study of the chart reveals many interesting general facts, although it must be remembered that the figures of other concerns might reveal essentially different



SELLING PRICES AND QUOTATIONS OF STEEL RAILS.

Assembly No. 231 and all other officers of unions who are now under indictment from being sent to State prison."

The trouble lately is that labor movements too often conflict with law. Several essential points have already been settled, one of which is that either corporations or individuals have the legal right to employ and discharge whom they please. Combinations may be formed to defeat this purpose, and just here such men as Barondess find that money can be used with effect, until legal impediments arise, as in the instance noted. It is an ill omen when those who seek to ameliorate the condition of labor find themselves again and yet again in conflict with law. Such occurrences convey an admonition that a change of tactics may be desirable

for a sliding scale of wages. Both parties were agreed as to the fairness of sliding scale, but the workmen insisted that the average monthly quotations of *The Iron Age* be made the basis, while the manufacturers took the ground that the actual prices received for the work done for each month should regulate the wages. At the time we explained why, in the particular case of rails, in which contracts for large quantities are often made for delivery many months later, the mill would be at a very great disadvantage if the men's proposition were adopted. Arguments are, however, not likely to be as convincing as a plain statement of facts, and the latter again may be presented in the most striking way graphically. We are in

lines. Only broad generalizations can therefore be made. The most striking fact shown is that during a heavy rise, like that of the close of 1885, 1886 and 1889, the price realized follows months afterward, and generally remains far below the quotations attained. The reason is simple. The mills book orders for delivery months ahead, so that the price which is being realized on work actually being turned out is far below that at which they are selling for the future. During a rising market, while orders are being rapidly placed, the mill fills up close to capacity, and when that point has been reached by the majority of works, the urgent needs of belated buyers drive up the quotations. At the high-prices, however, relatively little

business is done. Our diagram shows, for instance, that during the rise in 1889 the mill filled up with orders up to September, for delivery far into 1890.

It will be observed that the declines coincide far more closely in time with falling quotations, and that, as in the first half of 1885, the second half of 1888 and the close of 1890, the mill was obtaining more money for the work it was turning out than the market quotations were at the time being. The marked divergence of the two lines in some cases is probably due, in certain instances, to the fact that a mill may be forced, in order to keep fully employed, to market a part of its capacity at distant points. To reach them it may be under the necessity of taking orders netting far less at mill than business taken in what may be termed its own territory.

We publish this week a chart showing for a series of years the fluctuations in the American and English markets of tin and tin plate, constructed from the weekly quotations of *The Iron Age*. One striking fact is clearly shown, and that is that the prices of tin and tin plate have often moved independently of one another. The American and English prices of both commodities, of course, fluctuate in harmony, although at times advances or declines are initiated in our market.

The Ensley Steel Plant.

At a meeting of the stockholders of the Tennessee Coal, Iron and Railroad Company, the most important question was the following proposition from T. T. Hillman of Birmingham: "If the Tennessee Coal, Iron and Railroad Company agree to sell to myself and associates their present holdings of the stock of the Ensley Land Company (to be not less than \$5,000,000) for \$300,000 of the capital stock of a steel company, which we will organize and locate at Ensley, Ala., and will also agree to make a liberal contract for supplying such company with pig iron, coal, coke, water, &c., for a term of years, we will undertake upon our part to secure cash subscriptions at par to the amount of \$500,000 to the capital stock of such steel company out of a total issue of \$1,000,000 of stock, the remaining \$200,000 of stock to remain in the treasury of such steel company to be disposed of at par as the board of directors of such steel company may direct. The entire \$500,000 thus subscribed, together with the proceeds of sale of Ensley Land Company stock to the extent of \$300,000, to be used in building and constructing a steel plant of large capacity at Ensley, Ala. This proposition not to be binding upon either party until the \$300,000 cash subscription has been secured."

The directors had agreed to the above sale at their last meeting in New York, and the stockholders ratified it.

The Elyton Land Company have subscribed \$100,000.

The constitutionality of the new Indiana eight-hour law was decided adversely in the lower courts, but on the 9th inst. the Supreme Court reversed the findings of the inferior judges on a test case. The complainant in the case, John Griswell, testified that he had worked for the Noel Flour and Feed Company ten months for the agreed sum of \$1.25 a day. That during that time he was kept busy 11 hours a day. When he was discharged he

demanding pay for the extra hours, and under the court's decision he recovered the amount claimed. The court holds that, unless there is an expressed agreement to the contrary, employees who are required to work more than eight hours a day must be paid extra.

Pig Production Stationary.

While the coke furnace capacity in blast has gained a little, that of the anthracite and charcoal plants has fallen off a little, leaving a slight gain in favor of May 1 as against April 1. Production therefore continues at a low ebb, and we know that since the beginning of the month there has been little change.

The weekly product of all the furnaces on May 1 compared as follows with that of preceding periods:

	Furnaces in blast.	Capacity per week. Gross tons.
May 1.....	257	115,500
April 1.....	228	113,483
March 1.....	257	134,526
February 1.....	294	146,050
January 1, 1891.....	302	167,509
December 1, 1890.....	340	183,846
November 1.....	342	177,958
October 1.....	336	179,263
September 1.....	323	171,776
August 1.....	324	164,798
July 1.....	336	175,727
June 1.....	345	180,791
May 1.....	344	180,089
April 1.....	344	178,474
March 1.....	343	180,991
February 1.....	334	173,651
January 1.....	333	174,038
December 1, 1890.....	328	169,151
November 1.....	323	165,225
October 1.....	311	151,057
September 1.....	294	134,068
August 1.....	286	145,899
July 1.....	285	141,419

On the 1st inst. the status of the anthracite furnaces was as follows:

Anthracite Furnaces, May 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New York.....	19	8	2,821	11	3,238
New Jersey.....	13	4	1,858	9	2,267
Spiegel.....	3	1	153	2	45
Pennsylvania:					
Lehigh Valley.....	47	27	9,581	20	8,070
Spiegel.....	1	1	74	0	0
Schuylkill Valley.....	30	18	6,802	12	3,623
U. S. Susquehanna Valley.....	19	9	3,164	10	1,645
L. S. Susquehanna Valley.....	17	9	3,975	8	2,782
Lebanon Valley.....	16	12	5,903	4	1,120
Totals.....	164	90	35,331	74	22,770

For a number of months past our records show the following:

	Furnaces in blast.	Capacity per week.
May 1, 1891.....	90	35,331
April 1.....	91	36,598
March 1.....	93	38,543
February 1.....	95	40,212
January 1.....	101	43,166
December 1.....	105	43,474
November 1.....	104	42,141
October 1.....	100	38,627
September 1.....	104	39,115
August 1.....	106	41,013
July 1.....	112	45,142
June 1.....	117	45,912
May 1.....	123	46,912
April 1.....	119	46,116
March 1.....	115	45,790
February 1.....	107	43,905
January 1.....	105	42,857
December 1, 1890.....	100	40,053
November 1.....	96	40,603
October 1.....	94	36,558

Anthracite furnace capacity has remained practically stationary. The furnaces which have blown in are Crown Point, in New York; Wharton, in New Jersey, and Leesport, in the Schuylkill Valley. In New Jersey, Franklin and Pequest blew out; Mount Laurel, in the Schuylkill Valley, blew out because the in-wall fell in on the 30th inst., and Lochiel, in the Lebanon Valley, is banked.

On the 1st of the month the position of the coke furnaces was as follows:

Coke Furnaces, May 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New York.....	6	4	3,803	2	1,620
Pennsylvania:					
Pittsburgh district.....	25	12	17,754	13	17,929
Spiegel.....	1	0	0	1	778
Shenango Valley.....	19	3	2,857	16	10,485
Junata and Conemaugh Valley.....	19	7	3,201	12	5,310
Spiegel.....	1	0	0	1	400
Youghiogheny Valley.....	5	0	0	5	2,724
Miscellaneous.....	4	0	0	4	2,288
Maryland.....	3	1	1,820	2	3,830
West Virginia.....	5	0	0	5	3,098
Ohio:					
Mahoning Valley.....	15	4	3,132	11	8,570
Central and Northern.....	17	9	7,268	8	4,994
Hocking Valley.....	14	3	1,306	11	3,011
Hanging Rock.....	15	10	2,301	5	1,470
Indiana.....	2	1	122	1	230
Illinois.....	13	2	2,601	11	11,970
Spiegel.....	1	0	0	1	701
Wisconsin.....	4	0	0	4	3,691
Missouri.....	2	0	0	2	3,340
Colorado.....	2	1	630	1	560
The South:					
Virginia.....	14	2	3,892	7	3,010
Kentucky.....	4	2	540	2	500
Alabama.....	37	21	14,038	16	9,350
Tennessee.....	12	9	4,576	3	1,440
Georgia.....	2	1	743	1	299
North Carolina.....	1	1	125	0	0
Totals.....	246	98	70,529	148	101,026

As compared with previous months, the active coke furnaces make the following showing:

	Furnaces in blast.	Capacity per week.
May 1.....	98	70,529
April 1.....	96	67,570
March 1.....	113	85,093
February 1.....	125	94,473
January 1, 1891.....	143	112,153
December 1.....	168	127,634
November 1.....	168	122,555
October 1.....	170	127,247
September 1.....	156	119,757
August 1.....	150	113,040
July 1.....	163	120,673
June 1.....	167	123,940
May 1.....	169	122,489
April 1.....	173	121,560
March 1.....	169	122,595
February 1.....	169	118,568
January 1, 1890.....	169	119,396
December 1.....	162	116,519
November 1.....	160	112,269
October 1.....	154	102,454
September 1.....	141	96,744

Since the beginning of the month the Troy furnaces have been forced out of blast by the fire. In the Shenango Valley, Etna, Neshannock and Raney & Berger are the only furnaces in blast, while in the Mahoning Valley the same stacks are producing which were running last month. The Cambria Iron Company have blown in an additional furnace. In Ohio, Jefferson is again at work, while in Wisconsin all the plants are now idle, since the blowing out of the second Bay View of the Illinois Steel Company. In the South, Ashland, in Kentucky, has one furnace idle, Ensley, in Alabama, has started its fourth stack, and King, in Tennessee, has blown in.

Charcoal Furnaces, May 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New England.....	14	6	490	8	740
New York.....	8	0	0	8	800
Pennsylvania.....	16	2	184	14	736
Maryland.....	6	1	115	5	515
Virginia.....	18	1	110	16	785
Ohio.....	10	1	90	9	595
Kentucky.....	1	1	95	0	0
Tennessee.....	6	3	880	3	262
Georgia.....	4	0	0	4	610
Alabama.....	13	12	1,974	1	1,180
Michigan.....	27	12	3,062	15	4,270
Missouri.....	4	3	480	1	460
Wisconsin.....	4	0	1,420	2	690
Texas.....	1	0	0	4	950
California.....	1	0	0	1	120
Washington.....	1	0	0	1	170
Oregon.....	1	1	220	0	0
Totals.....	137	39	9,730	98	12,872

As compared with previous months the record stands as follows:

	Furnaces in blast.	Capacity per week.
May 1.....	39	8,730
April 1.....	41	9,206
March 1.....	51	10,890
February 1.....	56	11,965
January 1, 1891.....	59	12,280
December 1.....	67	12,738
November 1.....	70	13,262
October 1.....	66	13,389
September 1.....	63	12,904
August 1.....	59	10,745
July 1.....	61	12,511
June 1.....	61	12,312
May 1.....	52	10,698
April 1.....	52	10,804
March 1.....	39	12,906
February 1.....	38	11,378
January 1, 1890.....	59	11,485
December 1.....	66	12,779
November 1.....	67	12,898
October 1.....	63	12,047
September 1.....	60	11,327

Reports from 89 coke furnaces, 35 of which were banked or idle, whose capacity is 58,922 tons per week, show that they were carrying 164,635 tons of iron, as compared with 48 active and 54 idle furnaces and 201,390 tons of stock last month. This indicates a decrease in stocks per furnace of about 120 tons. In the Mahoning Valley the stocks amounted to 16,048 tons, while the Shenango Valley furnaces report 6977 tons of stock, as compared with 14,546 tons on April 1. Stock returns from every furnace in Allegheny County, Pa., show that the stocks in that district have reached an unprecedentedly low ebb, only 1550 tons being reported on hand. This amount is carried by three active furnaces, and has probably been marketed before this reaches our readers.

The stock status of the charcoal furnaces has not changed materially. 172,601 tons being held by 23 active and 28 idle furnaces, with a combined capacity of 11,908 tons per week.

The anthracite furnaces have accumulated more stock during the month just closed, 50 active and 18 idle stacks, of a combined weekly capacity of 28,582 tons, reporting 184,364 tons, against 65 furnaces and 130,198 tons of April 1.

It will be observed that the stock report is only for those furnaces named in connection with it, and that the idle furnaces referred to are those stacks which have until recently been producers and are likely to resume at an early date.

In the United States Circuit Court at Pittsburgh last week the court refused to dismiss the bill filed by the Belmont Nail Company of Wheeling, W. Va., against the Columbia Iron and Steel Company of Pittsburgh, which it will be remembered recently made an assignment. As a result the latter concern will remain in the hands of a receiver. A receiver for the defendant company was appointed April 9, and on April 14 John Huckenstein asked to be allowed to intervene. On May 1, 1891, the plaintiff asked leave to dismiss the bill, which request was not opposed by the defendant's attorney, but was opposed by Mr. Huckenstein and the Totten & Hogg Iron and Steel Foundry Company, who also desired to intervene, both being creditors of the defendant company. The court in its opinion said: "The appointment of the receiver was in pursuance of the bill. No reason is given for the dismissal of the bill, except that in some way the claim of the Belmont Nail Company has been satisfied. The court has the power, upon proper cause being shown, to permit the dismissal of the bill, but it must be satisfied that the interests of all parties would be advanced thereby. This has not been shown." Orders were made permitting John Huckenstein and the Totten & Hogg Iron and Steel Foundry Company to intervene in the suit.

The production of mica in the United States last year was valued at \$50,000.

Correspondence.

Bent and Bending Wood.

To the Editor.—Bent wood for all kinds of industrial and mechanical use has had a steady growth, absorbing one after another of the great mass of manufactured articles made at the present time. About 30 years ago the writer's father, after months of hard study, invented a dished saw and an eccentric attachment for swinging the plank, so as to take off the strip on back of sawed wagon-wheel felloes and to saw felloes. By this means he could make sawed felloes very rapidly; but soon after he began the manufacture of bent felloes for all classes of vehicles, and the order for bent rims gradually and in a few years absorbed the rim business, and sawed felloes went out of use entirely. Nearly all of the millions of wheels on vehicles of every description, including agricultural implements, are to-day made of bent rims. Formerly all chair backs were sawed rounding, by all conceivable means, and much money and capital was expended in devising saw machines to do the work. Some one happily thought of the idea of bending them; it did not take long to bring it into general use. To-day it would be a great novelty to see a sawed chair back. From the bent chair back it was an easy step to a bent frame for chair seats, especially for cane and perforated seats. It then became a common feature of chair and seat making to bend backs, legs and seats, and now perforated seats, used in school, depot, lawn and church furniture, are made of bent wood.

Wagon and buggy seats are made of bent bows; cutter and buggy bodies are made of bent wood; children's toys of all kinds are made in the same way, and hundreds of kinds of tools and handles for agricultural use and garden tools are all bent to shape. It saves lumber and time and cheapens production; besides, the steam acts as a preservative and hardener of the wood, cooks the sap and allows it to dry evenly and better without checking. A piece of rock elm or white oak, steamed and dried, becomes as hard as glass, and a steel nail cannot be driven into it without oiling. Sleigh and cutter runners and stone boat planks were always in an early day sawed out of heavy timber, but now the beautiful runners seen on all sleighs, as well as the knees, are universally made of bent wood. Sway bars, the fifth wheel on wagons, carts and hacks, and plow beams and handles, are all bent wood.

Of course bending wood is a science; the wood must be steamed just right, with the right kind of steam, or it will be brashy and soft. Nearly all kinds of wood will bend, if treated right. The writer bent a carload of black birch double not long since. The latest use to which the bent wood has been successfully adopted is for the rims or faces of wooden pulleys. It was a difficult work at first to master the rims. They had to be bent for large pulleys from great heavy plank 14 feet long, 4 inches thick and 13 inches wide, and for all the pulleys as wide as the lumber would run. The largest, strongest and latest improved machinery was constructed by the Menasha Wood Split Pulley Company of Menasha, Wis., who had determined to make bent wood rims for pulleys. They have the largest bending machine in the world. It will bend a rim for a 12-inch diameter pulley one minute, and the next moment will bend a great, strong, heavy, hard wood plank for a 96-inch diameter pulley. It will bend a stack of rims as high as the highest church steeple in one day. The men who operate the steam boxes and the machine have bent stock for wagons, sleighs and plows for 20 years, and the rims are as square and true and perfect as it is possible to make any rim by any means.

They think they have done badly if they break more than one single piece in a week. Now and then the steel straps used with cast-iron upsets to inclose the lumber while bending will break, and the heavy plank, released from its bend, will fly off and knock the men flat down on the floor or strike them in the ribs or stomach, or they just barely escape a flying piece of iron; still, they very soon get up and at it again as if nothing had happened. These little knock downs are their pastimes, and add the only variety to the work. Visitors at the pulley works usually stand apart and view these machines from a distance.

When the rims are removed from their steel bending forms they are stayed in shape with wooden straps, then laid away to air dry, after which they are kiln dried. When kiln dried they never lose their shape again, but remain exactly as left by the bending as if they had grown that way. The bent rims are all made from hickory or other hard wood, and make the best belt surface for pulleys ever discovered; besides, they never wear out. This company manufactured 50,000 pulleys last year. They sell them all over the world, and are to-day 2000 pulleys behind their orders. This seems to be a very fair evidence of the value of bent rims and bent wood for nearly all purposes where it can be used.

PUBLIUS V. LAWSON.

The following bids were made on the extension of the railway platforms at Brooklyn station of the Brooklyn Bridge:

Items.	Pounds.
Girders, bracing and plates.....	steel, 2,367,400
Columns and braces.....	steel, 322,600
Columns and braces.....	iron, 322,600
Arch ties.....	iron, 52,900

Total 2,642,900

	Of steel only.	Of steel and iron.	Months.
Phoenix Iron Company.....	\$87,668.55	\$87,507.25	3
Pennsylvania Steel Company.....	89,313.76	89,087.94	3
Cofrode & Saylor, Incorporated.....	90,946.42	91,345.60	4
Edge Moor Bridge Company.....	91,345.60	90,797.18	5
Pittsburgh Bridge Company.....	97,504.07	97,181.47	4
King Iron Bridge Company.....	99,320.95	98,998.35	6
Elmira Bridge Company.....		103,701.16	9
New Jersey Steel and Iron Company.....		104,507.36	5
Passaic Rolling Mill Company.....		107,007.45	6
Keystone Bridge Company.....		113,854.30	6

The following were the bids for the extensions of the railways at New York station, May 11:

Items.	Pounds.
Girders and connections	steel, 291,100
Roller beams	steel, 149,200
Columns and braces	steel, 317,000
Columns and braces.....	iron, 317,000
Arch ties.....	iron, 9,000
Coping.....	cast iron, 145,000

Total 626,000

	Steel and cast iron.	Steel, wrought and cast iron.	Months.
Phoenix Iron Company.....	\$19,821.55	\$19,805.70	3
Cofrode & Saylor.....		20,942.96	3
Edge Moor Bridge Works.....	22,394.33	22,337.27	3
King Iron Bridge Company.....	22,437.00	22,405.30	6
Pennsylvania Steel Company.....	22,714.44	22,742.97	5
New Jersey Steel and Iron Company.....		25,253.53	4
Keystone Bridge Company.....	28,459.21	28,364.11	4
Passaic Rolling Mill Company.....		30,922.00	6
Elmira Bridge Company.....		34,178.74	9

R. W. Cunningham, president of Newcastle Wire Nail Company and director of Crawford Iron and Steel Company, both of Newcastle, Pa., died on Tuesday.

The American Society of Civil Engineers will hold its annual convention at Lookout Inn, Chattanooga, Tenn., beginning Thursday, May 21.

The Condition of the Stove Trade.

D. M. Thomas, president of the National Association of Stove Manufacturers, delivered an address during the recent convention at Philadelphia from which we take the following:

Prices of stoves have fallen since your first meeting from \$136 per ton to \$86.70, but margins have not fallen in like proportion. Then the most favorable margin possible, as exhibited by Mr. Perry's cost sheets, which, although perhaps inaccurate in particulars, yet were, on the whole, a fair computation, was \$9.69 per ton, or $7\frac{1}{10}$ per cent. on the selling price. The average margin of last year was about the same percentage. Taking into account the difference between now and that time in the condition of the country, in the state of general business, in the cheapness of money and in the average rate of interest, a profit of 7 per cent. on sales to-day is infinitely better than the same percentage then, for the rate of all increments has decreased where the investment is not subject to monopoly. There are but one or two classes of stoves at present sold below cost, and those quite unnecessarily, and only because the makers of a majority are not members of your association, nor of local associations, and will not avail themselves of the opportunities of co-operation.

An excess of capacity now exists in about the same ratio as it did in 1872, but it is not as dangerous as then, because of the greater intercommunication of stove men and the consequent greater facilities for adjusting the production to the demand, and because of the automatic regulation of a uniform cost system. Competition is just as strong, there is just as great a desire to operate foundries to their utmost capacity, there is just as much exertion made to capture trade as then, but the work of your institution has regulated that competition to a very great degree and adjusted it to a legitimate basis by the development of localized adjuncts. There is not a section of this whole country to-day, except the New England States and New York City, where there is not a local organization in a more or less fair working order, regulating the conditions of the distribution of stoves, and in the city of New York strenuous efforts are even now being put forth to associate the parties interested. As for the jealousy and suspicion which are on record as being so rampant, and which were occasionally so flagrantly vicious, while they have not entirely disappeared, while they never will entirely cease so long as human nature is human nature, unrestricted by Divine grace, yet they have been materially mitigated, and in a sense refined, by the obligations and amenities of personal intercourse.

The statistics of business are materially changed in some respects. The number of foundries now is 293, as against 214, a very small increase compared with the population, but the average size of foundries has increased; the product of each foundry being estimated at 1374 tons, valued at \$119,000, instead of 1000 tons, valued at \$136,730. The aggregate output of stoves now is 402,560 tons, instead of 214,000 tons. The value of the total production now is \$34,900,000, as against \$29,260,000 then. The average weight of iron used then in stoves per head of population per annum was $11\frac{1}{10}$ pounds; now it is $12\frac{3}{10}$ pounds. So that we have increased in the number of foundries, in the average capacity of each foundry, in the value of the total output of stoves and in the output per head of population per annum. But the average production of stoves per head of population per annum now is but $54\frac{1}{10}$ cents, instead of $75\frac{3}{10}$ cents then; the price per ton realized now, notwithstanding the immense advance in

quality and expense of decoration, averages but \$86.70, instead of \$136.73. Pig iron, then over \$40, is now but \$15. What a transition these figures evince! And, considering that the prices of stoves and of pig iron and other factors of cost were about the same in 1880 as in 1872, and that therefore that mighty transition has occurred within ten years, is there not reason to attribute the easy graduation of the change and the rapid adjustment of manufacturers to it to something outside the ordinary scope of business, and what can that be but the circumspection and prevision induced and developed by this association?

Ordnance and Projectiles for Coast Defense.

Bids were opened in the Ordnance Bureau of the Navy Department at Washington, on Tuesday, for supplying steel forgings for 8, 10 and 12 inch guns for coast defense and for armor-piercing projectiles for guns of these calibers. The Midvale Steel Company's bid for ten sets of 8-inch forgings was 29 cents per pound; for ten sets of 10-inch forgings, 27 cents per pound; for two sets of 12-inch forgings, 27 cents per pound. The Bethlehem Iron Works Company of South Bethlehem, Pa., offered to supply all the forgings at $28\frac{1}{4}$ cents per pound, or any portion of them at 30 cents per pound. As an alternative bid the Bethlehem Company offered to supply 11 sets of 8-inch forgings, 10 sets of 10-inch forgings and 11 sets of 12-inch forgings at \$800,000. This bid, however, was for lower weight forgings than the Department called for and will not be considered. There were two bids for the armor-piercing projectiles, for which the Department asked for offers to the amount of \$100,000. The Carpenter Steel Company of Reading, Pa., who are at present making projectiles for the navy, offered to supply 104 8-inch projectiles at \$15,288; 208 10-inch projectiles at \$57,408, and 52 12-inch projectiles at \$24,960. The Midvale Steel Company offered to supply 100 8-inch projectiles at \$14,500; 205 10-inch projectiles at \$58,425, and 50 12-inch projectiles at \$25,000. The contract for the gun forgings will be awarded to the Midvale Company and for the projectiles to the Carpenter Steel Company.

The Washington Board of Ordnance and Fortifications concluded its regular monthly session on Monday and made several important allotments of funds for continuing the work of harbor defense. Chief among these was an item of \$4,250,000 for the manufacture of 100 guns by contract—25 8-inch, 50 10-inch and 25 12-inch. This is the first opportunity private gun-makers have had for years for contracts of such proportions, and lively competition may be expected. It will be not only a competition among themselves, but against the Government, for upon the prices submitted depend largely the chances of private firms securing future contracts. The appropriation was made by Congress largely for the purpose of giving the private manufacturers a chance to demonstrate whether or not they can build as good and as cheap guns as those turned out by the Government. It is expected that at least four firms will enter the competition—the Midvale Steel Works, the Bethlehem Iron Works and Carnegie, Phipps & Co., all of Pennsylvania, and the South Boston Iron Works, lately moved to Kentucky.

A meeting of the American Tinned Plate Manufacturers' Association will be held in the parlors of the Hotel Anderson, Pittsburgh, on Wednesday, May 20. Committee meeting at 8.30 a.m.; regular meeting at 9.30 a.m.

New Lines of Elevated Railroad.

The Manhattan Elevated Railway Company of New York have made formal application to the Rapid Transit Commissioners for permission to erect some 18 miles of new lines at a total cost of \$10,500,000. The plan proposed is to run a line from the City Hall up Centre street to Canal, along Canal to Watts street, to West street, and along West street to Battery place, connecting with the present elevated structure at that point. At the same time it is proposed to run a spur through Jay street from the Ninth avenue line in Greenwich street to the proposed road in West street, thus forming a connection from the Bridge with the west side lines and the North River ferries. The second line proposed begins at the intersection of Watts and West streets, connecting at that point with the first line, extending north along West street to Tenth avenue, and from there easterly along Fourteenth street to Sixth avenue, intersecting both the Sixth and Ninth avenue lines. This would afford direct connection with the Christopher and West Fourteenth street ferries for both the east and west side lines. A short loop would connect the Sixth avenue line and the proposed West street line at Cortlandt street, and is intended for the benefit of the passengers via the Cortlandt and Liberty street ferries, and would permit passengers via the Pennsylvania road to step right from the new double-deck ferryboats into trains, which will carry them upon the Sixth avenue line. The fourth route begins at the Houston street station of the Ninth avenue line, runs thence through private property to Clarkson street, along Clarkson to Carmine street to a connection with the Sixth avenue line at West Third street.

The most important line of all is that proposed to run from the Thirty-third street station of the Sixth avenue line directly up Broadway to the Boulevard and along the Boulevard to the Kingsbridge road, and thence by one of two routes to 187th street and Kingsbridge road, from there north to Emerson street. The sixth projected line would start at the present terminus at 155th street and Eighth avenue and run along the Harlem River to 204th street, and by one of two alternate routes make connection with the fifth line on Emerson street. The company ask to be allowed to build a third track upon all of the present lines with the exception of the Third avenue from Chatham square to Ninth street, where they wish to run two additional tracks. It is proposed to use the third track solely for express trains, which rapid transit the residents of the uptown district now demand. While the line traversing the Boulevard would be the most important one, owing to the rapid growth of the large outlying district on the west side of the Park, which is now without adequate means of transit, it will probably lead to the most opposition from property owners on upper Broadway. All these lines would be extensions of the Manhattan system, and passengers would be allowed to pass from one structure to another without the payment of additional fares. The commissioners meet Thursday to discuss the plans.

A question being discussed among furnacemen in Eastern Pennsylvania, as to the relative advantages of good modern pipe stoves and fire-brick stoves, is soon to be tested at the works of the Thomas Iron Company at Hokendauqua. The company are now fitting up at one of their furnaces three modern fire-brick stoves, while they have one of the furnaces of the same plant equipped with the most modern design of the Cooper-Durham stoves.

MANUFACTURING.

Iron and Steel.

The Hollidaysburg Iron and Nail Company of Hollidaysburg, Pa., in March of the present year reduced their puddlers to \$3.75 per ton, but concluded last month to put their wages back again to \$4, taking effect on April 1. The puddling department of their plant has been running double turn, but unless there is an improvement in business, it will probably go on single turn before long.

Pierce, Kelly & Co., proprietors of the Douglass Furnaces at Sharpsville, Pa., advise us that their stock of pig iron has been completely exhausted, and they have recently purchased a few carloads to supply their customers. Their purchases have been small, as they have cancelled a large number of orders. This firm have considerable trade in Southern Ohio and Indiana, and make a specialty of foundry and forge iron. Their No. 1 furnace has been newly fitted up and will be put in operation as soon as they can secure a supply of coke.

Spearman Iron Company of Sharpsville, Pa., proprietors of the Spearman Furnaces of that place, have sold all the pig iron they had on hand when their furnaces closed down, and are now compelled to refuse all orders. Their furnaces are in good shape for a long blast, and will probably be put in operation as soon as they can secure sufficient coke to warrant them in starting up.

During the month of April just closed there was turned out at the American Iron and Steel Works of Jones & Laughlins, Limited, at Pittsburgh, 11,939 tons of finished Bessemer steel. On Tuesday, the 5th inst., the finished product amounted to 514 tons, and on the following day there was turned out 444 tons of finished steel. There are about 100 puddling furnaces in this plant, which are now turning out about 160 tons of puddled iron every 24 hours. But one blooming mill is being operated, and another is now in course of construction, which, when completed, will about double the present capacity of the plant. The completion of the new blooming mill will not necessitate any increase in the converting department, as the firm are now able to blow considerably more steel than they can roll. When the new blooming mill is completed and put in operation, this concern expects to turn out 1000 tons of finished steel every 24 hours.

Seneca Furnaces of McKeefrey & Hofius, at Leetonia, Ohio, are both in operation. One stack is producing mill iron and the other is running on foundry iron. These furnaces were formerly known as Grafton Furnaces.

Dover Furnaces of the Pennsylvania Coal and Iron Company, at Canal Dover, Ohio, are in operation, turning out mill and foundry iron.

Jefferson Furnace of the Jefferson Iron Works, at Steubenville, Ohio, after an idleness of nine months, has again resumed operations. It is turning out Bessemer pig iron, the greater part of which is used in the Bessemer steel plant of this firm.

But one stack of the Mingo Furnace of the Junction Iron Company, at Mingo Junction, Ohio, is in operation. It is producing about 125 tons of Bessemer pig iron per day, which is used in the Bessemer steel plant of this firm. It is not known when the other stack of this firm will go in operation.

The long idleness of the blast furnaces in the Mahoning and Shenango valleys and in places tributary to these points has almost completely exhausted the large stocks of pig iron that were held by the furnaces when the shut down took place in February last. We are advised on the best authority that on April 15 the entire amount of No. 1 Bessemer pig iron on hand at all the furnaces in the Mahoning and Shenango valleys, the Cleveland, Ohio, district and the Wheeling district amounted to about 15,000 tons, and this amount has been greatly depleted since. There is no doubt but that a number of idle furnaces in the Mahoning and Shenango valleys and at other points will resume operations just as soon as they are assured of a regular supply of coke. The prices now ruling for Bessemer pig iron would assure them a fair profit on their product.

In the Pittsburgh district, which embraces all the territory within a radius of 25 miles of that city, are located 26 blast furnaces. Of these but 12 were in operation on the first day of the present month. The active stacks are as follows: Carrie Furnace Company, two in operation; Carnegie Bros. & Co., Limited, five in operation; Laughlins & Co., two; Isabella Furnace Company, one; Monongahela Furnace Company, one; Moorhead, McCleane Company, one. The idle stacks are as follows: Clinton Iron and Steel Company, one; Car-

gie Bros. & Co., Limited, three; Edith Furnace of Oliver Iron and Steel Company; one stack of Laughlins & Co.; two of Isabella Furnace Company; two Lucy stacks of Carnegie, Bros. & Co., Limited; one of Monongahela Furnace Company, and two of Shoenberger & Co. It is probable that during this month a number of idle stacks will resume blast, as some of the concerns are daily receiving consignments of coke, and as soon as a sufficient amount is on hand to warrant them in resuming operations their furnaces will be put in blast. As an indication of the small amount of iron now on hand we can state that in Allegheny County at the present time there is not more than 1500 tons of iron unsold. A number of the concerns in Pittsburgh, notably Carnegie, Bros. & Co., Limited, and Shoenberger & Co., have recently made large purchases of pig iron from other districts.

The Blandon Rolling Mill, at Blandon, Berks County, Pa., has been sold to the Blandon Iron and Steel Company, a company incorporated under the laws of New Jersey, with a paid up cash capital of \$100,000.

Builders of machinery will be interested to know that John L. Stevenson, 619 Pullman Building, Chicago, is asking bids for a complete four-mill tin plate plant, consisting of sheet mills, pickling machines, furnaces, cold-roll train, tinning sets, boilers, &c. This is a *bona fide* enterprise, in which reputable Chicago business men are interested, and the plant is to be located at Chicago. Full particulars will be furnished on application to Mr. Stevenson, who is an engineer of experience in the construction of steel works, iron works and tin plate works.

It is given out that arrangements have been completed whereby the Western Iron Company of Kansas City, manufacturers of bar iron, nuts, bolts, &c., will locate at Kenilworth Station, Ind., upon the Michigan Central line, midway between Gibson and Tolleston. The company will move from Kansas City as soon as buildings are prepared, and will begin operations with 350 employees. The plant at Kansas City is reported to be largely owned by the Eells of Cleveland, and it is further rumored that it has been sold to parties who will remove it. The reason for moving is said to be that Kansas City is too far west for successful competition in iron.

The Fort Payne Furnace Company, Fort Payne, Ala., are now making some repairs and improvements, with a view of again going into blast soon. They expect to improve the quality of their coke by crushing and washing their coal.

It is thought that there is no doubt that the \$1,000,000 steel plant will be built at Ensley City, Ala., by the Tennessee Coal, Iron and Railway Company, adjacent to their four furnaces. The Elyton Land Company of Birmingham, Ala., it is said, take \$100,000 of the stock, and \$400,000 will be derived from individual sources.

D. E. Bardeleben Coal and Iron Company, Bessemer, Ala., now have four coke furnaces in blast, and another at Bessemer and one at Axmoor will also be in operation by June 1.

The Rome Iron Company, East Rome, Ga., L. S. Colyer, president, of Chattanooga, Tenn., have completed their charcoal furnace and went into blast on May 6, using 58 per cent. ore. Everything started off smoothly.

The Clifton Furnace, at Jenifer, Ala., after undergoing repairs and being relined, is again turning out its usual superior car wheel charcoal iron. A small quantity of this iron has recently been shipped to an English factory, which, it is claimed, takes the place satisfactorily of higher priced iron used by them heretofore.

A representation of the English stockholders of the Talladega Iron and Steel Company, Limited, of Talladega, Ala., have just held a meeting at their plant in this country, and have concluded to bond the property for \$200,000. One hundred and fifty thousand of the bonds will be taken equally by the American and English stockholders. Extensive improvements will be made, and the furnace repaired and put into operation again at an early day under new management.

Chattanooga and Chicago parties are about to commence the erection of a large coke-iron furnace close to Talladega, Ala., they possessing large ore properties there.

A company has been organized, with a capital of \$1,000,000, to be known as the Welsh-American Tin Plate Company. Works for the manufacture of tin plate are to be erected in Eastern Pennsylvania, the plans embracing the building of four tin mills, with a productive capacity of 2000 boxes per week. Ultimately the plant is to be increased to 30 mills, with an annual capacity of 500,000 boxes. A circular, issued by F. R. Phillips, of 200 Walnut Place,

Philadelphia, who signs himself as chairman of the Board of Directors, announces that no Welshman will be allowed to contribute to the stock unless he is an American citizen, and that no Welsh employees will be engaged, unless they are citizens, or declare their intention to become citizens. It is proposed that skilled employees will participate in the profits. Twenty-five dollars per share is payable on allotment, and an equal amount on the first, second and third month after allotment. It is stated that from carefully prepared cost sheets by practical tin-plate manufacturers the company will show a net profit of at least 20 per cent. on capital invested.

The Iroquois Furnace Company, whose works are at South Chicago, have established their Chicago offices in rooms 636 and 638 in the Rookery. They expect to begin to make pig iron early in June. S. Frank Eagle is president and general manager of this company.

It is reported that the Grand Trunk Railway has decided to build rolling mills and a forge at Point St. Charles, Montreal, Canada.

The Marinette Iron Works, at Marinette, Wis., has been robbed of \$7000 by burglars, who cracked the safe.

No. 1 blooming mill at the American Iron Works of Jones & Laughlins, Pittsburgh, has shut down for repairs. The mill will be thoroughly overhauled and several improvements added. The repairs will take about two weeks.

The Attalla furnace of the Southern Iron Company, at Attalla, Ala., has blown in after being banked for four months.

The new Rome furnace at Rome, Ga., was lighted for the first time on May 5, and is now in full operation. The furnace will be run at full capacity, which is supposed to be 80 tons of charcoal iron per day.

A reduction in wages of 16 per cent. will take place at the works of the Brooke Iron Company, Birdsboro, Pa., on May 15, according to reports.

An incendiary fire destroyed the storehouse, two small buildings and stock to the value of \$14,000 at the Laramie Rolling Mills, Laramie, Wyoming, recently.

The Wilkes Rolling Mill Company have been organized at Sharon, Pa., by John B. Wilkes and others, all practical iron men. P. L. Kimberly of P. L. Kimberly & Co., Limited, proprietors of the Atlantic Iron and Nail Works, at Sharon, Pa., has donated sufficient ground near his works for the erection of the new plant, which will manufacture muck bar exclusively.

The Pittsburgh Bridge Company of Pittsburgh have received the contract for a plate-girder viaduct, 800 feet long, over a railway track in Indianapolis. The bridge is to be built jointly by the Indianapolis Union Railway Company and the city of Indianapolis.

Anderson, Dupuy & Co., proprietors of the Pittsburgh Steel Works at Pittsburgh, manufacturers of all descriptions of crucible and open-hearth stock, have established a branch office in rooms 1-2, International Bank Building, St. Louis, Mo., with W. J. Woosley in charge.

The deed conveying the property of the Youngstown Rolling Mill Company to the Youngstown Iron and Steel Company of Youngstown, Ohio, was filed in the court for record in that city last week. The consideration named in the transaction is \$195,000.

During the month of April there was produced in the wire nail department of the Beaver Falls mills of Carnegie, Phipps & Co. at Beaver Falls, Pa., 50,300 kegs of finished wire nails on 116 machines. This doubles the output of the same month one year ago on the same number of machines.

Machinery.

The Fisher Foundry and Machine Company of Pittsburgh have recently added to their machine shop equipment a 16-foot boring mill, 12-foot planer, 48-inch horizontal boring machine and a 72-inch radial drill press. They have also put in a 20-ton traveling crane, which they built from their own design. The works of the firm are fairly busy on steam engines, traveling cranes and plate-glass machinery, of which the company are now making a specialty. They have recently completed a 20 x 24 inch engine and two 10-ton traveling cranes to be placed in the plant of the Pennsylvania Tube Works, in Pittsburgh, and a 20-ton traveling crane for foundry practice is now in course of construction.

In answer to the report that the Paige Tube Company, of Warren, Ohio, manufacturers of compressed and wrought iron pipe would erect

a foundry, we are advised that the matter has not as yet been settled; it depends altogether on the outlook for business.

In a previous issue we made mention of the fact that A. J. Sweeney & Son, general machine and steamboat builders of Wheeling, W. Va., had decided to remove their plant to Staunton, Va. The firm have recently concluded all negotiations for the removal of their entire plant to the above point. This firm has been located in business in Wheeling since 1830, and while their business has been very satisfactory, they have of recent years felt very sharply the competition of the many well equipped shops in their territory, all of which bid for any and all kinds of work. The attention of the firm was some time ago attracted to the valley of Virginia as being tributary to a good territory—notably, Tennessee, Georgia, Alabama and Virginia, itself, in which States very great developments in iron interests are being made, and there seemed to be a dearth of people in their line to supply the demand. After a careful survey, they concluded that the city of Staunton presented a better location for future business than any city, and having a very well established trade which would follow them in any location which they selected, offered an excellent opportunity for the extension and successful conduct of their business. They propose to locate at Staunton a model plant, well equipped, and have all necessary facilities for the convenient and economical carrying on of their business. They are now perfecting plans, and expect to commence operations on the new works within the next few days. It is their intention to construct the plant entire and equip it with a new steam plant, electric traveling cranes, new shafting, hangers and pulleys, and prepare all foundations so that they can keep their present works in operation, and lose little or no time in transferring their machinery to the new location. Also an electric light plant will be built to thoroughly light the works.

The Cleveland Foundry Company, Cleveland, Ohio, report business 40 per cent. larger than last year at this time. They are crowded with orders for light gray iron castings.

Doncaster's iron foundry at Hunter's Point was destroyed by fire 6th inst.

The Murray & Stephenson Iron Foundry, located at Anniston, Ala., which owing to the death of both Mr. Murray and Mr. Stephenson, has been lying idle for the past year or more, has settled its litigations and will soon go into operation. Mr. Carter, late superintendent of the Anniston Pipe Works, will manage the concern.

C. P. McWane & Co. have removed their foundry and machine shop from Wytheville to Graham, Va., where it will hereafter be known as the Graham Foundry and Machine Company, the Graham Land and Improvement Company having subscribed for stock of the company to the amount of \$10,000.

The Union Iron Works Company, Selma, Ala., have reorganized with a capital stock of \$40,000.

The Sergeant Mfg. Company are enlarging their machine shop at Greensboro, N. C., by the erection of a 75 x 50 foot addition.

The works of the Texarkana Car and Foundry Company, recently burned at Texarkana, Texas, will be rebuilt on a larger scale.

The plans for the American Mfg. Company's new foundry and factory to be erected at St. Paul, Minn., include a foundry 110 x 50 feet, one story high, costing \$10,000, and a factory two stories high, 100 x 40 feet, to cost \$20,000.

The Coldwell-Wilcox Company's foundry and machine works, at Newburg, N. Y., were burned on the 7th inst. The loss is \$35,000 and the insurance \$20,000.

The Centropolis Car and Wheel Works, at Kansas City, Mo., have been sold at auction to the Midland National Bank of that city for \$35,000. The works originally cost \$150,000, and an effort will be made to reorganize the company and resume business.

The Hendrick Mfg. Company of Carbonado, Pa., have broken ground for a new machine shop 140 x 40 feet.

M. H. Whitcomb and others have organized the Horton Machine Company at Holyoke, Mass., for the manufacture of emery grinding machinery.

A Schenectady (N. Y.) firm are arranging to erect a foundry at Lansingburgh, N. Y., which will employ about 100 men.

The foundry and machine shops of C. C. Page, at Oshkosh, Wis., have been damaged by fire to the extent of \$30,000.

The Jeffrey Mfg. Company, manufacturers of roller and detachable chain belting at Columbus, Ohio, have opened a Chicago branch at

48 South Canal street. J. H. Gregg, who has been placed in charge of the new branch, has had many years of experience in handling the well-known chain elevating and conveying specialties of this company.

The Albuquerque (N. M.) foundry and machine works were burned on the 4th inst. at a loss of \$200,000.

The Cork Pulley Covering Company of Baltimore, Md., announce that with their increased facilities they are able to promptly fill all orders for cork pulley covering.

Frank H. Ball announces that he has terminated his connection with the Ball Engine Company of Erie, Pa., and has sold all his patents and inventions covering engine and governing devices to the Ball & Wood Company of 15 Cortlandt street, New York. This company have been organized by Mr. Ball and others for the purpose of building improved Ball automatic cut-off engines. The new company have purchased a site of 4½ acres on the main line of the Central Railroad of New Jersey at Elizabethport, N. J., and are erecting machine shops on the improved gallery plan, and equipping them with modern tools, with a view to building Ball engines with the greatest economy. Frank H. Ball is vice-president and general manager of the company, and T. C. Wood and Chas. R. Vincent, who formerly carried on the sale of the Ball engine at the above address, under the style of Chas. R. Vincent & Co., but whose firm name and good will have been acquired by the new company, are president and secretary-treasurer, respectively, while T. G. Smith, Jr., also of the old firm, will represent the company at Cincinnati.

J. C. F. Rider has removed his machine shop from South Newmarket, N. H., to Exeter, same State.

The Beecher Mfg. Company's plant, at Meriden, Conn., has been purchased by the Peerless Button Hole Attachment Company, who will begin the manufacture of a patent wrench.

The E. H. Horton & Son Chuck Company, Windsor Locks, Conn., have bought the iron foundry of A. W. Converse & Co.

The Farrell Foundry and Machine Company, Waterbury, Conn., will begin work soon on a new machine shop 100 x 100 feet, one and two stories in height.

Hardware.

The Ashley Wire Company, at Joliet, Ill., are gradually getting their new plant into good running order. They draw wire from purchased rods and manufacture all styles of barb wire, annealed, bright, market and baling wire, nail wire, staples and wire nails.

F. A. Walsh & Co.'s tinware factory on St. Paul avenue and Thirteenth street, Milwaukee, was burned on the night of the 8th inst. It was a five-story brick building, filled with machinery and partly completed stock. The loss will reach \$75,000.

Miscellaneous.

It is reported that the Anniston Pipe Works, Anniston, Ala., will soon go out of receiver's hands and be leased by parties of prominence from Cincinnati, Ohio, provided the bondholders accept of the proposition and terms offered, which are said to be liberal. If this is perfected their iron supply will be had from the Woodstock Iron Company's coke furnaces, adjacent to the pipe works.

The United States Rolling Stock Company, Anniston, Ala., have received an order for 100 cars to be built, which is to be followed by another for 500. This is of such uncommon occurrence of late in carbuilding that it is considered worthy of note, and shows some little activity has at last commenced in this direction.

The shops of the American Wool Company, in Sidney, Ohio, were burned the 6th inst. Loss, \$100,000.

The stock of metals, molds and machinery of the New York Smelting and Refining Company, at West and Jane streets, was sold out by Deputy Sheriff Tracy the 6th inst., by virtue of execution aggregating \$41,000, and most of the articles were bought in, it is said, by execution creditors, and the business will be continued in the interest of the creditors.

The first shipment of a 5000-ton contract for iron pipe was made from Birmingham, Ala., on the 9th inst., over the Richmond and Danville Railroad for Baltimore.

It is reported that the American Screw Company of Providence, R. I., will establish a plant in England.

Another new manufacturing town has been located in the environs of Chicago. It is located on the Calumet Terminal Railroad,

northwest of Blue Island, and is to be known as Wireton Park. The promoters of the enterprise have already made contracts for the removal to their town of the Chicago Wire and Spring Company, a wire-nail plant now at Belleville, Ill., and the Farquhar Heating Company, whose works are at Wilmington, Ohio.

Among recently authorized corporations in Illinois are the following: Holmes & Pyotts Company, Chicago, to manufacture and use iron and its products for building and machinery purposes; capital stock, \$300,000; incorporators, Edward B. Holmes, James M. Pyott and David Pyott. Rogers Park Light, Heat and Power Company, Rogers Park, to build and operate gas and electric plants; capital stock, \$75,000; incorporators, Hervey E. Keeler, Newton A. Partridge and George W. Wilbar. Boston Metallic Thresher Company, Chicago, to manufacture threshers, farming implements and farm power machinery; capital stock, \$300,000; incorporators, Isaac T. Barton, F. L. Robinson and Robert H. Smith.

Imports of Tin Plates.

Returns of foreign commerce for April reflect the influence of the new tariff, which advances the duty on tin plates from 1 cent to 2½ cents per pound after July 1. Already the foreign supply has come forward in large quantities in anticipation of this increase in the rate. Tin in slabs is now free, but after July 1, 1893, it is to be 4 cents a pound. At this port for the first quarter of 1890 there were landed 411,672 boxes of tin plates, valued at \$1,760,955; for the same period of this year there were brought here 666,415 boxes, valued at \$2,900,478; for April, 1890, there were imported here 140,466 boxes plates, valued at \$597,532; for April, 1891, the total was 198,904 boxes, valued at \$916,878. For the first week in May there were landed here in 1890 52,314 boxes plates, valued at \$228,285; for the same week this year there were 69,054 boxes, valued at \$343,794. To sum it up, for the last 18 weeks there were landed here about 934,373 boxes of tin plates, valued at \$4,161,150, duty and freight not included, against 604,452 boxes valued at \$2,586,772, for the same period of last year. In slabs for the last 18 weeks we have landed here 13,771,921 pounds, valued at \$2,646,904, against 8,945,002 pounds, valued at \$1,731,456, for the same time last year.

The Mayor of the city of Philadelphia, Pa., has advertised for proposals for permission to build an elevated railroad in that city. The contract provides for a double track structure on Market street from the Delaware River to Sixty-third street, skirting one-half of the new City Hall on Penn square. Before any bid will be accepted the bidder must file a bond for \$500,000 for the faithful performance of the work, and the accepted bidder must give bonds in the sum of \$50,000, with security, conditional to pay all damages caused to the city, and also an additional bond for \$25,000, with security, to secure quarterly payment to the city of an accepted rate per centum upon gross receipts, and also an additional bond of \$2,000,000 to secure the payment of all damages to property owners or tenants. The bids will close with the Mayor of Philadelphia on June 16, 1891. Specifications, plans, &c., can be secured from the Director of the Department of Public Works, James H. Windrim, 212 City Hall.

Stephen N. Noble, late manager of the charcoal furnaces at Ironton, Ala., has been appointed general manager of the Woodstock Iron Company, at Anniston, Ala., Walter Crafts having resigned.

The Scranton Steel Company of Scranton, Pa., has paid a dividend of 15 per cent.

TRADE REPORT.

Pittsburgh.

Office of *The Iron Age*, Hamilton Building,
Pittsburgh, May 12, 1891.

In some respects the outlook for the Iron and Steel interests is favorable, while in others it is not; crop reports continue satisfactory, but this is to a considerable degree offset by labor complications, which appear to be general throughout the country. Here in Pittsburgh, owing to the carpenters' strike, a great many contemplated improvements are being held in abeyance, and while some will be held over until next year, others will probably be abandoned altogether.

Pig Iron.—There has been a fair degree of activity the past week, but no quotable change in prices. Bessemer Iron is still in demand for immediate or nearby delivery, but no sales were reported above \$17, cash, which may be regarded as the ruling price; that it is becoming scarce in this and the valley districts is admitted, but consumers, nearly all of whom have been buying more or less of late, are pretty well supplied, although if the Coke strike continues much longer the little Bessemer remaining in the hands of sellers may command a further advance. The largest buyers here, Carnegie, Phipps & Co., are reported as having all they want for the present, and the general belief is that the strike in question will soon be terminated, and just as soon as it is a number of furnaces will no doubt be started up on Bessemer. In regard to Mill Iron, consumers appear to have no difficulty in getting all they want at \$14 @ \$14.25, cash; several sales were made by city furnaces during the past week at \$14, cash, at furnace, which is equal to \$14.25, delivered to any of the city mills. The stock of Forge Iron in the Mahoning and Shenango valleys is small, and it is being sold to valley consumers at about Pittsburgh prices, so that there is little offered in this market. The demand for Foundry Irons continues light, while prices remain unchanged. We quote as follows:

Neutral Gray Forge.....	\$14.00 @ \$14.25, cash
White and Mottled.....	13.00 @ 13.50, "
All-ore Mill.....	14.75 @ 15.25, "
No. 1 Foundry.....	15.75 @ 16.00, "
No. 2 Foundry.....	14.75 @ 15.25, "
No. 3 Foundry.....	14.00 @ 14.25, "
No. 2 Charcoal Foundry.....	21.50 @ 22.00, "
Bessemer Iron.....	17.00 @ 17.25, "

Muck Bar.—There has been rather more doing, and the market has developed a firmer tone; sales of several good-sized lots reported at \$26.50 @ \$26.60; one lot at \$26.75. There is not so much offering and a little more inquiry, with most of the mills making a specialty of Muck pretty well sold up.

Manganese.—There is a fair demand, but prices remain unchanged. We can report sales in various lots of some 300 tons of 80 % domestic at \$66.50, which is the ruling price; 80 % foreign cannot be laid down here at the price quoted. There has been but little foreign sold here for some time past, Carnegie, Phipps & Co. supplying this market at present.

Manufactured Iron.—The demand for Finished Iron is fair, although not up to what it should be, and while the mills generally are in operation but few of them are working up to their full capacity. Prices remain as last quoted, viz: Best city-made Iron at 1.70¢ @ 1.75¢ for Bars, full extras; 2.10¢ @ 2.15¢ for Plate and Tank, and 2.80¢ @ 2.85¢ for No. 24 Sheet, all 60 days, 2 % off for cash. Valley mills Bars quoted at 1.55¢ @ 1.60¢, half extras, with mills out there pretty well supplied

with orders. Skelp Iron is quoted as a week ago, 1.60¢ @ 1.65¢ for Grooved and 1.80¢ @ 1.85¢ for Sheared, four months, 2 % off for cash. Painter & Son have 3000 tons Cotton Ties loaded in barges for the South and will be sent forward on the first rise, and W. D. Wood & Co. have a barge loaded with Sheet Iron for St. Louis; Lindsay & McCutcheon are also shipping Cotton Ties South.

Nails.—There is an increased demand reported for Cut Nails in the Wheeling district and the market is firmer, but prices remain unchanged; Quoted at \$1.55 for 35 average and \$1.60 for 30 average, 60 days, 2 % off for cash. In regard to Wire Nails, while we continue to quote at \$2, 60 days, 2 % off for cash, it is intimated that sales have been made below the price quoted. The demand continues light, but it is hoped that it will improve. Labor troubles are hurting the Nail trade, as everything else.

Merchant Steel.—Bessemer Steel is quoted as follows: Tool, 7¢ @ 7½¢; Spring, 2½¢; Machine, 2.40¢ @ 2.50¢; Toe Calk, 2½¢; Steel Bars, 1.90¢ base, full extras; Steel Tire, 2.20¢ base, all 60 days, 2 % off for cash; Crucible Spring Steel, 4¢; Crucible Machinery, 5¢.

Structural Iron.—The demand continues light for the season, and there is not likely to be much improvement while labor complications continue. Here, owing to the carpenters being on a strike for eight hours, there is but little doing in the way of building, and it is feared that a good deal of work has been abandoned for this year. Prices remain unchanged: Channels and Beams, 3.10¢; Angles, 2.05¢; Tees, 2.65¢; Steel Sheared Bridge Plates, 2.30¢; Universal Mill Plates, Iron, 2.10¢; Refined Bars, 1.85¢ @ 1.90¢.

Barb Wire.—There is a fair business, but no change in prices, which we continue to quote as before: Glidden Painted, \$2.85; do. Galvanized, \$3.40; Four-Point Painted, \$2.80; do. Galvanized, \$3.35. These rates are for car lots at makers' works.

Billets and Slabs.—Bessemer Steel Billets continue firm, in sympathy with Bessemer Iron, and prices since our last report have further advanced. Sales of 1500 tons reported at \$25.50, and 1000 tons at \$26. As yet there have been but few sales made above \$25.50, and if the Coke strike was brought to a close, it is doubtful whether the price last quoted would be maintained long. However, for the time the market is steady at prices named, and the mills both here and at Wheeling are pretty well supplied with orders.

Wire Rods.—There does not appear to be much inquiry, and there is so little doing that it is difficult to give reliable quotations. May be quoted nominally in the absence of sales at \$36 @ \$37, f.o.b. at makers' works, according to character of order and delivery.

Wrought-Iron Pipe.—There is more inquiry, and an increased business is looked for as the season becomes more advanced. Usually the demand commences to loom up this month. Prices same as a week ago: Discounts on Black Butt Pipe, 55 %; on Galvanized do., 45 %; on Black Lap, 65 %; on Galvanized do., 52½ %. Boiler Tubes, 2½-inch and smaller, 55 %; 2½-inch and larger, 60 %; Casing, all sizes, 55 %.

Old Rails.—There is not much inquiry for Old Iron Rails, and in the absence of sales may be quoted at \$24. Stock is small, and sellers look for a better market in the near future. There is rather more inquiry for Old Steel Rails for remelting, and a firmer market is looked for in the near future. Quotable at \$17.25 @ \$17.75.

Steel Plates.—There is nothing new to note; business continues light, while prices remain unchanged, as follows: Fire Box, 3.90¢ @ 4.25¢; Flange, 2.70¢; Shell, 2.45¢ @ 2.50¢; Tank, 2.10¢ @ 2.15¢.

Railway Track Supplies.—Business possibly is a little better, but there is still plenty of room for improvements; it is hoped that demand will improve as the season advances. Prices remain unchanged: Spikes, either Iron or Steel, \$2.05, 30 days, f.o.b. at makers' works; Splice Bars, Iron or Steel, 1.85¢ @ 1.95¢; Track Bolts, 2.80¢ with Square and 2.90¢ with Hexagon Nuts.

Steel Rails.—There is a fair demand, which it is thought will improve later on in the season; price remains unchanged at \$30, f.o.b. at works.

Old Material.—The demand for No. 1 Wrought Scrap continues light and prices are weak; some small sales at \$19.50, net ton; Iron Axles may be quoted at \$26 @ \$27, net ton; Cast Scrap, \$14 @ \$14.50, gross; Old Car Wheels, \$16.50 @ \$17, gross; sale 2000 tons Steel Bloom Ends at \$18.

Coke.—The strike continues, but the indications are that it will soon be brought to a close. Operators report that they are increasing their working force almost every day, also that they are increasing their production of Coke considerably, although as yet they are not in condition to do much business.

The business agreement heretofore existing between H. E. Collins and O. M. Hartzell, Iron and Steel brokers, at Pittsburgh, was dissolved on May 1, by the retirement of O. M. Hartzell. Mr. Hartzell will engage in the same line of business, under the firm name of O. M. Hartzell & Co., with headquarters in room 701, German National Bank Building, in that city.

Cincinnati.

(By Telegraph.)

Office of *The Iron Age*, Fourth and Main Sts.,
CINCINNATI, May 13, 1891.

Pig Iron.—At last there is a commencement of what seems to be a revival in the demand for Iron, there being a material enlargement in the sales of Southern Forge and the lower grades of Foundry Iron and more or less increase in the consumption of many other varieties. There are free buyers of Gray Forge at \$10 at the furnaces, and this has been the basis of several transactions. Anything less is now exceptional, while several furnaces refuse to accept that price; in fact, they offer to sell nothing at present, believing that they will get better figures later in the season. Buyers are anxious to contract for forward delivery at this rate, and have done so for June and possibly for July, but at the close there are no sellers under \$10.25, at which price there have been sales running through four months, commencing with June. For later deliveries \$10.50 and \$10.75 are the prices asked, but are not readily obtained. Southern Coke No. 2 Foundry Iron is in good request, and is being sold at quotations, but No. 3 do. is in better supply, and is offered 25¢ lower than before. There have been offerings of Tennessee and Alabama Charcoal at considerably less than quotations, but this was by a single foundry desiring to realize, and cannot be considered the general market price. The demand is largely from Agricultural Implement Works, but there is some increase in the use of Iron by Pipe Works and for repairs of rolling stock, but the latter is in the far West. The general outlook, however, is decidedly more confident, and a better feeling

pervades the trade; and, while this may be said to be in prospective, the improvement in trade is largely dependent upon sentiment, and it is much gained to have that in the right direction. Closing quotations are as follows:

Foundry.		
Southern Coke, No. 1.....	\$15.00 @	\$15.25
Southern Coke, No. 2.....	14.00 @	14.25
Southern Coke, No. 3.....	13.25 @	13.50
Ohio Soft Stone Coal, No. 1.....	16.50 @	17.00
Ohio Soft Stone Coal, No. 2.....	15.50 @	16.50
Mahoning and Shenango Valley.....	17.50 @	18.00
Hanging Rock Charcoal, No. 1.....	20.00 @	22.00
Hanging Rock Charcoal, No. 2.....	19.00 @	20.00
Tennessee and Alabama Charcoal, No. 1.....	17.00 @	17.50
Tennessee and Alabama Charcoal, No. 2.....	16.50 @	17.00
Forge.		
Gray Forge.....	12.75 @	13.00
Mottled Neutral Coke.....	12.50 @	12.75
Car Wheel and Malleable Irons.		
Southern Car Wheel.....	19.50 @	20.00
Hanging Rock, Cold Blast.....	20.00 @	21.00
Lake Superior Car Wheel and Malleable.....	19.00 @	20.00

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., May 12, 1891.

It is not clear that the market has improved since date of our last report, although it may be safely asserted that things are no worse than they were at that time. The bank failures have had a depressing influence, and while both these concerns have long been regarded with suspicion, the fact of nearly \$3,000,000 of depositors' money being suddenly locked up is a serious matter to the trading community. Heavy losses were also met with during the fall and winter months by Philadelphia institutions, and although it is not thought that there are any other weak spots, Philadelphia and vicinity has been seriously hit during the past six months, and the effects are seen in the general conservatism which pervades every department of trade. The improved tone of the Iron market noted a week ago has probably been checked locally by the bank failures, but the effect is not likely to be of long duration, as the requirements of large consumers will force many of them into the market before long. As a rule the demand for both Pig and Finished Iron is about equal to the supply, so that while there is no advance, it is equally true that prices are no lower, and on the average of sales are probably fractionally higher than during the preceding week. The outlook is considered to be favorable, and while there is nothing immediately available in the way of large orders, the general position warrants the confidence which is expressed, even if not always acted upon. Some large building operations are said to have been postponed for financial reasons, but others, such as the Betz Building and the Reading Terminal, are pretty sure of being put through at an early date. Then there is the promise of Tin Plate works to be erected in Philadelphia or near by, all of which, in addition to the usual summer work, ought to impart a good deal of activity to local trade. As regards the Tin Plate works, the information available is not as explicit as could be desired, as no names are given, although F. R. Phillips is authority for the statement that \$1,000,000 capital has already been subscribed, and that in two months' time work on the buildings will be actually under way. Taking everything into consideration, there appear to be good reasons for believing that things will soon be better, and while there may be some temporary set backs, the ultimate result is sure to be greater activity and more or less improvement in prices.

Pig Iron.—The market has a steady tone; some people think it strong, but that probably is only in spots. Choice Foundry are scarce, and \$18 at tide for such is

easily obtained, and \$16.50 @ \$17 for No. 2. Other Irons, however, can be picked up at 50¢ @ \$1 less money, but there are usually good reasons why sellers accept bids of that kind. Sometimes freights are specially favorable, or quality may be hardly up to standard, or what is much the same, the Iron is not known, and to secure a trial low figures are indispensable. The same remarks apply to Mill Irons, and although \$14.75 @ \$15.25, delivered, appear to be full prices for first-class Irons, there are others at \$14 @ \$14.50 which are claimed to be of satisfactory quality. Something depends on point of delivery, the advantage being at competing points a little to the south or west of Philadelphia. The demand during the week has been of a well-distributed character, and has aggregated a very satisfactory amount of business, besides which several inquiries for large lots are under consideration, and may or may not result in sales. Bids are at low figures, and although none of the local furnaces are likely to accept them, there is just a chance that some of the Southern companies may decide to accept opportunities of that kind. At the following quotations for lots delivered in consumers' yards the market may be considered steady to firm:

Ohio Softeners, No. 1x.....	\$19.00 @	\$19.50
Ohio Softeners, No. 2x.....	18.00 @	18.50
Standard Penna., No. 1x.....	17.50 @	18.00
Standard Penna., No. 2x.....	16.50 @	17.00
Medium Penna., No. 1x.....	17.25 @	17.50
Medium Penna., No. 2x.....	16.00 @	16.25
Virginia, No. 1x.....	16.75 @	17.50
Virginia, No. 2x.....	15.75 @	16.00
Standard Neutral All-ore Forge.....	14.75 @	15.25
Ordinary Forge Cinder mixed.....	14.00 @	14.25
Hot Blast Charcoal.....	20.00 @	23.00
Cold Blast Charcoal.....	24.00 @	27.00

Bessemer Pig.—Market very dull, nominal prices being \$17 @ \$17.50 at furnace for standard, and \$19 @ \$20 at furnace for special brands.

Spiegeleisen.—There is some inquiry for 10 @ 12 %, for which importers quote \$22.50 @ \$23, duty paid, but it is not known what buyers' ideas are.

Ferromanganese.—Market dull, but \$64 @ \$64.50, duty paid, for 80 % seems to be about the usual asking price. Foreign markets said to be firmer.

Steel Billets.—Business seems to have come to a full stop for the present. Makers quote \$27.50 @ \$27.75, delivered at points on the Susquehanna, or \$28 @ \$28.25 on the Schuylkill, but at these figures consumers are disposed to take their time. They may take hold later on, but for the present they are inclined to wait developments, although holders show no signs of weakening.

Steel Rails.—There is not much new business to report, but mills are holding their own, and so far as can be seen are not likely to recede from their price of \$30 at mills. Small lots are frequently called for, which with orders on hand promise full employment during the summer months.

Muck Bars.—The market is unsettled and irregular. Some makers are firm at \$26.65 @ \$27, delivered, some ask still higher prices, while in other cases, we hear of sellers at \$26.50. Price depends a good deal on the urgency or necessity of the seller. On forced sales \$26.50 is all that could be realized, but in the general market \$26.75 @ \$27 would not be considered too high for any one that had to place an order in course of a few days. For extra good qualities sales were made a few days ago at \$27, f.o.b. cars sellers' mill.

Bar Iron.—The market appears to be a trifle better, and some good-sized lots have been taken at better prices than could be obtained 10 or 12 days ago. The difference is only a trifle, 2½¢ to 5¢ per 100 pounds, but it is important, as showing that the reaction has set in and the tendency is toward higher figures. Mills have

more orders on their books than for some time, with indications of a continued good demand for the present at all events. Large consumers are conspicuously absent from the market, however, and confidence in permanently higher prices cannot be very strong until they begin to show themselves. Nominal prices are 1.75¢ @ 1.85¢ for best refined Iron, but orders for lots of 50 tons and upward can be placed at concessions, according to deliveries, payments, &c.

Skelp Iron.—Some business has been done during the week on the basis of 1.70¢ @ 1.75¢, delivered, for Grooved, but there is not the demand that is likely to advance prices. Mills are nearly all anxious for orders, and to secure them prices are not strictly adhered to.

Plates.—Business is somewhat more active, but there is enough competition for it to effectually check any movement toward higher prices. The feeling is steadier, nevertheless, and, while very low figures are met with occasionally, there is a general endeavor to avoid the sharp cuts that were made some time ago, and, on the whole, it is probable that prices average better than they did during the preceding month. Nominal asking prices are about as follows for lots delivered in consumers' yards, but on desirable orders concessions of a tenth or thereabouts are not infrequent:

	Iron.	Steel.
Tank Plates.....	2.00 @ 2.10¢	2.05 @ 2.20¢
Refined.....	2.20 @ 2.30¢	2.05 @ 2.10¢
Shell.....	2.30 @ 2.40¢	2.40 @ 2.50¢
Flange.....	3.20 @ 3.30¢	2.50 @ 2.75¢
Fire-Box.....	4.00 @ 4.25¢	3.00 @ 3.50¢

Structural Material.—There is a better demand in a small way, and mills are gradually filling up with work. Orders for both bridge and structural work have come in more freely during the past few days, so that, on the whole, the trade feel hopeful of the future. Prices, delivered, about as follows: Angles, 2.05¢ @ 2.10¢; Sheared Plates, 2.05¢ @ 2.10¢, and 10¢ @ 15¢ more for Steel, according to requirements. Tees, 2.5¢ @ 2.6¢; Beams and Channels, 3.1¢ for either Iron or Steel.

Sheet Iron.—The market is exceedingly dull, and although prices are not quotably lower, there is no difficulty in securing concessions when the order is of any magnitude. Best makes are held with some degree of firmness at about the following quotations, viz.:

Best Refined, Nos. 14 to 20.....	3.00¢ @ 3.10¢
Best Refined, Nos. 21 to 24.....	3.10¢ @ 3.20¢
Best Refined, Nos. 25 to 26.....	3.20¢ @ 3.30¢
Best Refined, No. 27.....	3.40¢ @ 3.50¢
Best Refined, No. 28.....	3.50¢ @ 3.60¢
Common, ¼¢ less than the above.	
Best Soft Steel, Nos. 14 to 20.....	3.3¢ @ 3½¢
Best Soft Steel, Nos. 21 to 24.....	3½¢ @ 3¾¢
Best Soft Steel, Nos. 25 to 26.....	3¾¢ @ 4¢
Best Soft Steel, Nos. 27 to 28.....	4¢ @ 4½¢
Best Bloom Sheets, ¼¢ extra over the above prices.	
Best Bloom, Galvanized, discount.....	@ 65 %
Common, discount.....	@ 67½ %

Old Rails.—Prices are entirely nominal at \$22.50 @ \$23.50 for Iron or \$17 @ \$18 for Steel; price according to point of delivery.

Scrap Iron.—There is a demand at about 50¢ to \$1 below quotations, but holders are unwilling to make concessions, so that sales are a little slow, but mostly at about the following quotations, viz.: No. 1 Railroad Scrap, \$21 @ \$22, Philadelphia, or for deliveries at mills in the interior \$21.50 @ \$22.50, according to distance and quality; \$15 @ \$16 for No. 2 Light; \$14 @ \$15 for best Machinery Scrap; \$13 @ \$14 for ordinary; \$15 @ \$16 for Wrought Turnings; \$10 @ \$10.50 for Cast Borings, and nominally \$25 @ \$26 for Old Fish Plates, and \$17 @ \$18, delivered, for Old Car Wheels.

Wrought-Iron Pipe.—The demand is improving, but it is difficult to maintain prices, and it is said that the late schedule

of discounts is more frequently quoted than the following one, which is given as official, viz.:

Butt-Welded Black.....	55	%
Butt-Welded Galvanized.....	45	%
Lap-Welded Black.....	65	%
Lap-Welded Galvanized.....	52½	%
Boiler Tubes, 2½ inch and under.....	55	%
Boiler Tubes, 2½ inch and larger.....	60	%

Chicago.

Office of *The Iron Age*, 59 Dearborn street, }
CHICAGO, May 12, 1891.

The market has improved quite considerably within the past week, just as has been foreshadowed in our recent reports. In some instances prices have responded to the better tone, and even where they have not advanced a very hopeful feeling has developed among sellers, and they will not be so ready to meet buyers' views as they have been. The improvement noted is quite independent of railroad operations. The managers of Western roads are still holding off in their purchases of material, alleging that although they are sanguine that crops will be large, yet they will not feel warranted in making preparations for the ensuing traffic until they are absolutely certain that they will have a large tonnage to haul. As soon as they come in the market there will consequently be an increased impetus to all kinds of business.

Pig Iron.—Heavy transactions are noted in local Coke Iron and in Lake Superior Charcoal. The Coke Iron transactions aggregate some 25,000 tons, covering deliveries running through the balance of the year, and in some cases extending into next year. A much firmer feeling is evinced by sellers in consequence of the large tonnage already booked and the prospect of still more large orders being entered at an early day. Buyers are coming in now who have been figuring for some time, which shows that they are convinced that bottom has certainly been reached. Sales of Charcoal Iron have been made at slightly higher prices than those prevalent a week since. Some brands may still be had at \$17, but the quantity available at that price is evidently limited. More would have been taken last week than was sold if it could have been had at the rates made the previous week. Prices are undoubtedly on a higher plane now. Complaint is heard that Coke Iron is scarce for immediate delivery, especially Nos. 1 and 2 Foundry, but as soon as Coke can be had there are furnaces ready to blow in and relieve the market. The new Iroquois Furnace Company are now taking orders for future delivery, which introduces another important factor in the local Coke Iron situation. Ohio Silvers are a little stiffer under the continued strong demand for Softeners. Southern Coke Iron sellers report a great deal of inquiry, but light transactions, evidently because prices are higher than for local Iron. We quote for cash, f.o.b. Chicago:

Lake Superior Charcoal.....	\$17.00 @ \$18.00
Local Coke Foundry, No. 1.....	15.50 @ 16.00
Local Coke Foundry, No. 2.....	15.00 @ 15.50
Local Coke Foundry, No. 3.....	14.50 @ 15.00
Local Scotch.....	16.00 @ 16.50
Ohio Strong Softeners.....	18.50 @ 19.00
Southern Coke, No. 1.....	16.00 @ 16.50
Southern Coke, No. 2.....	15.50 @ 16.00
Southern Coke, No. 3.....	14.75 @ 15.00
Southern, No. 1, Soft.....	15.25 @ 15.50
Southern, No. 2, Soft.....	14.25 @ 14.50
Southern Gray Forge.....	14.25 @ 14.50
Tennessee Charcoal, No. 1.....	18.00 @
Alabama Car Wheel.....	22.50 @ 23.50
Coke Bessemer.....	17.00 @
Hocking Valley, No. 1.....	18.25 @ 18.50

Bar Iron.—The improvement set forth in last week's report continues, and the bottom price for any kind of Bar Iron at Chicago, from mill, is 1.65¢, half extras. Small lots and orders for future delivery are held at 1.70¢. Considera-

ble tonnage has been entered in lots of 500 to 1000 tons each for three months' delivery. Most of this business is outside of the Car building trade, which continues comparatively quiet. Very fair inquiries are coming up daily and prospects are bright for more business in the near future. Jobbers continue to quote 1.75¢ @ 1.80¢ from store, full extras, but they are doing such a large business that they are very firm and may advance prices at an early day.

Other Manufactured Iron.—Structural material is in strong demand, with more large buildings soon to be contracted for. Business in Plates runs about the same as last week, with a good prospect ahead and no change in prices. Sheets are in vigorous request both from local buyers and distant consumers, with inquiries covering from 100 to 600 tons each, and sellers asking the same rates as last week. Galvanized Iron is rather quiet, but prices appear to have touched bottom among the manufacturers, and they are now disposed to wait for business rather than to force it.

Merchant Steel.—The influx of orders has shown remarkable increase the past few days, but they are mainly for small lots. Season contracts are being held back, and may probably not be placed until the usual time. Prices are unchanged, as follows: Tool Steel at 6½¢ @ 8¢ and upward, according to brand; Open-Hearth Machinery at 2.30¢ @ 2.65¢, Spring at 2.50¢ @ 2.75¢, Tire at 2.30¢ @ 2.60¢, and Bessemer Bars at 2.20¢ @ 2.30¢.

Track Supplies.—The Steel Rail situation presents no new features. The orders being entered are comparatively small, although it is known that a great deal of heavy business must soon be placed. There is no conflict over prices, but merely a desire on the part of the roads to wait until crop prospects are more thoroughly established. Quotations continue at \$31 and upward, according to quantity. Iron Splice Bars have been sold in small lots at 1.85¢ @ 1.90¢. Spikes are nominally held at 2¢, but no large orders have recently come up to test prices. The same statement holds good as to Track Bolts, which are quoted with Hexagon Nuts at 2.80¢ @ 2.90¢.

Old Rails and Wheels.—Old Iron Rails have sold at \$23 delivered at buyers' works and at \$23.25 Chicago. The latter price was paid for 600 tons. These figures indicate an upward tendency for Old Material. Old Steel Rails are quiet at \$14.50 @ \$17, according to length. Old Car Wheels are still dull, but as Car Wheel foundries are more active, a movement in Wheels is soon to be expected. They are nominally worth \$16.50 @ \$17.

Scrap.—A decided improvement has been experienced in this line, but not enough to affect prices. There is less movement in cheap than in high-grade Scrap. Cast is very quiet, and Steel is also neglected. Dealers quote as follows per ton of 2000 pounds: No. 1 Railroad, \$19; No. 1 Forge, \$18.50; No. 1 Mill, \$13.50; Fish Plates, \$21 @ \$21.50; Axles, \$24; Pipes and Flues, \$12.50 @ \$13; Horseshoes, \$18.50; Cast Borings, \$7.50 @ \$8; Wrought Turnings, \$11.50; Axle Turnings, \$13; Machinery Cast, \$12; Stove Plates, \$8.50 @ \$9; Mixed Steel, \$11; Coil Steel, \$15; Leaf, \$16; Tires, \$18.

Metals.—Copper is quieter, with 11½¢ @ 11½¢ asked for Casting brands and 14¢ for Lake, in carload lots. Large inquiries are in the market for Spelter, with Prime Western quoted at 4.90¢ @ 5¢ for early delivery, but higher rates are asked for futures. Early in the week the inquiry for Pig Lead was fair, and, as there was but little to be had, buyers had to pay 4.10¢ and 4½¢; later there was more disposition to sell by some holders, and prices eased off a trifle. The market at the close was quiet at 4.05¢ bid, 4.10¢ asked.

Louisville.

LOUISVILLE, Ky., May 11, 1891.

Pig Iron.—While inquiries continue rather large and from all parts, the ideas of consumers are for low prices, and they are not willing to pay any advance, claiming that there is nothing in the situation to warrant this, and that orders for finished material are light; so that while there has been a fair amount of trading during the past week, and some round lots have been sold, these have been about on basis previously reported. Several transactions, involving a very large amount of Iron, are under negotiation, and will most probably be closed within the next two or three days, but there is yet considerable margin between the prices quoted and what the buyers feel willing to pay. There is no disposition on the part of furnaces to crowd Iron on the market; on the other hand, believing that bottom has been reached, and that from now on the tendency will be decidedly upward, some of the furnaces are disposed to yard what surplus they make over requirements for regular orders and hold it until later, when they feel assured that buying will be heavy, as they are aware that stocks in consumers' hands are light. We make no change in quotations:

Southern Coke, No. 1 Foundry...	\$14.50 @ \$15.00
Southern Coke, No. 2 Foundry...	13.75 @ 14.25
Southern Coke, No. 3 Foundry...	13.25 @ 13.75
Southern Coke, Gray Forge.....	12.75 @ 13.25
Southern Charcoal, No. 1 Foundry	16.00 @ 17.00
Southern Car Wheel.....	17.00 @ 20.00

St. Louis.

OFFICE OF *The Iron Age*, 214 N. Sixth st., }
ST. LOUIS, May 11, 1891.

Pig Iron.—The market shows increased activity since our last report. Sales have been made in larger quantities, and, while prices are not notably higher, there is an underground of strength that is making itself felt. Stocks of Iron on the furnace banks are notably light, and as stocks in consumers' hands are in much the same condition the outlook for better prices is considered encouraging. The market has not settled itself as yet, the Coke strike continuing to be a disturbing element, although there is an abundant supply of Coke to meet all requirements. Foundry Irons are particularly scarce and in good demand. Car-Wheel Irons are moving freely, and some sales of this grade have been reported during the past few days at full price. The country trade are feeling the market, and it is expected that last week's increased business is merely the preliminary opening of a steadily increasing trade from this time on. Prices, as stated above, are firmer, and should the present demand continue a gradual advance can be counted on. We quote as follows for cash, f.o.b. St. Louis:

Southern Coke, No. 1 Foundry.....	\$15.50 @ \$15.75
Southern Coke, No. 2 Foundry.....	14.50 @ 14.75
Southern Coke, No. 3 Foundry.....	13.75 @ 14.00
Gray Forge.....	13.25 @ 13.50
Southern Charcoal, No. 1 Foundry.....	17.50 @ 18.00
Southern Charcoal, No. 2 Foundry.....	17.00 @ 17.50
Missouri Charcoal, No. 1 Foundry.....	15.50 @ 16.00
Missouri Charcoal, No. 2 Foundry.....	15.00 @ 15.50
Ohio Softeners.....	18.00 @ 19.00

Bar Iron.—There is a better feeling noticeable in this department. A number of large contracts are on the market and will shortly be closed. Mills have enough work on hand and in sight to keep them comfortably employed and prices as quoted herewith are firmly adhered to. We quote as follows: Lots from mill command 1.65¢ @ 1.67½¢, delivered on cars at East St. Louis. Small lots from store are quoted at 1.80¢ @ 1.85¢, according to quantity.

Barb Wire.—There is a steady demand for Barb Wire, and inquiries received

indicate an active trade from now on. Mills are adhering to prices, and what little cutting is done is traceable to jobbers, who still have some Wire on hand bought before the advance. We quote as follows: Painted 2.95¢; Galvanized 3.50¢; carload lots, 10¢ per cwt. less than above prices.

Wire Nails.—There is as yet no improvement in prices. Mills who have large stocks on hand, despairing of any early advance, have disposed of large quantities during the past week, at what are considered quite low prices. The outlook cannot be considered encouraging, although it seems strange that prices should continue at the present low basis. Mills quote from \$2.15 to \$2.20 for carload lots, f.o.b. St. Louis.

Chamberlain, Turney & Co. of Columbus, Ohio, who have a St. Louis office at the Bank of Commerce Building, have been appointed sole agents for the King Pig Iron, made in Tennessee from spathic ores.

Cleveland.

CLEVELAND, May 11, 1891.

Iron Ore.—Some purchases have been made during the past week, but at about the same figures given in the last issue of *The Iron Age*. Ordinary non-Bessemer are moving along at about \$3.50 per ton, while Bessemer Ore from the Menominee and Gogebic districts sells for figures very closely approximating \$4.50, f.o.b. vessels, Cleveland. The highest grade of Specular and Magnetic Bessemer can be bought for about \$1.25 less than was paid in 1890, while the non-Bessemer of the same district sell for \$1 below last year's quotations. Considerably more Ore is being sold than is generally acknowledged. This is a little strange, in view of the fact that nothing can be done toward bringing down new Ore for many weeks to come, and that none will be needed for almost as many months. Very little has been done toward adjusting the differences between the vesselmen and their engineers and firemen, or the equally perplexing disagreement that separates the mine owners and the Ore handlers. The efforts made to clear away the mountains of Ore on the lower lake docks are almost too slight to attract attention. Unless an unexpected demand for new Ore should manifest itself very soon there will be little room for the output of 1891 on the docks at Cleveland, Ashtabula or Fairport before August 1. It is probable that 700,000 or 800,000 tons of Ore have been sold to date, but some large contracts are likely to be placed within the next two weeks. Quotations are as follows:

No. 1 Specular and Magnetic Ores, Bessemer quality.....\$5.25 @ \$5.50
No. 1 Specular and Magnetic Ores, non-Bessemer quality.... 4.00 @ 4.50
Gogebic Ore, Bessemer quality... 4.25 @ 4.50
Menominee Ore, Bessemer quality 4.40 @ 4.50
Menominee Ore, non-Bessemer quality..... 3.50 @ 3.60

Pig Iron.—The market continues to improve in every way, both as to inquiries and prices. Foundry Irons continue in very good demand, both for immediate and future delivery. Bessemer are of course in the best favor and the following prices are quite readily obtained:

Nos. 1 to 6 Lake Superior Charcoal \$21.00 @ \$21.50
Nos. 1, 2 and 3 Bessemer, per ton... 17.30 @ 17.80
No. 1 Strong Foundry, per ton... 16.80 @ 17.30
No. 2 Strong Foundry, per ton... 15.80 @ 16.30
No. 1 American Scotch, per ton... 16.80 @ 17.30
No. 2 American Scotch, per ton... 15.80 @ 16.30
No. 1 Soft Silvery, per ton... 17.00 @ 18.30
Mahoning and Shenango Valley Neutral Mill Irons, per ton... 14.80 @ 15.30
Mahoning and Shenango Valley Red Short Mills, per ton... 15.30 @ 15.80

Manufactured Iron.—Some improvement in the number of inquiries is reported. Prices remain at 1.60¢ @ 1.65¢

for Common Bar, with a few scattering sales reported.

Old Rails.—An offer of \$23 for a small lot of Old American Rails was made during the past week and was refused. About \$23.50 is the average price paid.

Scrap.—Business is only fairly good, with prices rather weak. No. 1 Railroad Wrought commands \$20; Old Wheels about \$16.50 @ \$17 and Cast Scrap \$13.50 @ \$14.

Runyon, Stubbs & Mack have been dissolved, Mr. Stubbs retiring from the firm. The business will be continued by W. C. Runyon and W. E. Mack, under the firm name of Runyon, Mack & Co.

Detroit.

WILLIAM F. JARVIS & Co., Detroit, Mich., under date May 11, say: There is very little change in the situation since our last report. More inquiries for Lake Superior Charcoal have been received, but extended delivery is asked in most cases, and furnacemen do not want to accept present low prices for long deliveries. The market here is not in as demoralized a condition as reports would indicate in Chicago. Sellers prefer to hold their Iron unless they can see their way clear to obtain cost for their product. Prices of Southern Irons remain about as they have been for several weeks past. What orders are taken are at regular prices, and in most cases prompt delivery is requested. On account of the continued trouble in the Connellsville Coke district it is difficult for foundries to obtain as good quality as they are accustomed to use, and thus more demand is caused for Silvery Iron. With business quiet and no change in prices we quote as follows:

Lake Superior Charcoal, all numbers.....\$18.50 @ \$19.00
Lake Superior Coke, Bessemer... 18.00 @ 18.50
Ohio Blackband (40 per cent.)... 18.00 @ 18.50
Katahdin (Maine Charcoal)... 23.00 @ 24.00
Lake Superior Coke Foundry, all ore..... 18.00 @ 18.50
Southern No. 1..... 16.25 @ 16.75
Southern Gray Forge..... 14.75 @ 15.25
Jackson County (Ohio) Silvery. 18.25 @ 18.75

Financial.

The continued heavy outflow of gold has affected all markets, and being accompanied by reaction in wheat, an unsettled feeling has been quite prevalent. The causes of disturbance are now better understood, since it has become known that the foreign demand for gold was caused by the supposed intention of Russia to withdraw from deposit at European centers the enormous amount of available cash standing to her credit, estimated at upwards of \$100,000,000 in Berlin, Paris and London. As Russia, so it is stated, has deferred the conversion of her loan, apprehension is no longer felt, especially as it is believed that there is less probability that the peace of Europe may soon be disturbed. For like reasons the monetary crisis in Portugal attracts less attention. The presumption now is that within a reasonable length of time gold will return from Europe, in payment for wheat and other commodities, and normal conditions be restored. The "precipitation of the supremacy of the silver standard," which has been hinted at, is regarded only as one of the remote contingencies. In less than two months from now wheat will begin to come forward, and having due regard for the highly favorable crop prospects reported by the Government Bureau at Washington, no State average being lower than 93, a heavy fall in wheat was an inevitable result.

In the same connection, as strengthening the assurance of remunerative prices, it is necessary to observe the reduction of

the import duty on grain by France and the open markets promised by Spain, Portugal, Venezuela, Brazil and other countries with which the United States have improved commercial relations. Directly bearing on the local monetary situation is the satisfactory conclusion of the recent meeting of the Advisory Board of the Western Traffic Association. A "rate disturber" was removed from his position, and the association promised an existence of five years. The local building trade is checked by the lumber strike and lock out. The iron workers made overtures to co-operate, and expect speedily to reopen their shops.

On the stock market the advance of the Bank of England rate to 4 per cent. and an advance paid in London for American eagles had a depressing influence. An uneasy feeling on the Paris bourse also had its effect. The closing of the Spring Garden National Bank, due to bad internal management—in this respect resembling the Keystone Bank failure—was scarcely observed, as the Philadelphia banks, as a whole, have \$8,972,250 in excess of the legal requirement. After the New York bank statement of Saturday, the market was weak. On Monday the announcement that the Russian Minister of Finance had concluded not at once to withdraw the balances to Russia's credit in the various financial centers of Europe was understood to mean that the foreign demand for gold would be temporarily relieved. National cordage was depressed on a statement showing that only 40 per cent. of the capital represented in rope manufacture is in the combination.

United States bonds are quoted as follows:

U. S. 4½s, 1891, registered.....	100
U. S. 4½s, 1891, coupon.....	101
U. S. 4s, 1907, registered.....	119½
U. S. 4s, 1907, coupon.....	119½
U. S. currency 6s, 1895.....	113

The merchandise markets have been more active, influenced to some extent by the opening of navigation. Wheat is again quiet but firm, with many bids for cargoes for shipment to the Continent but little under the market. Carriers are wanted for future loading. In dry goods the tone was improved.

The bank return last week showed a loss of \$3,566,300 in cash and \$2,679,350 in surplus reserve, leaving the latter \$4,763,950. Loans were contracted \$1,444,200. Exports of specie for the week, as reported by the Custom House, are \$7,492,365, and for the year since January 1, \$40,271,108, as compared with \$11,540,885 for the same time in 1890. The net exports of gold during April were \$25,000,000.

The posted rates for bankers' sterling are \$4.85½ @ \$4.89½.

Imports at New York during April reflect the influence of the new tariff, particularly as concerns imports of tin, for which see another column. The total amount to \$58,840,828, which is larger than for any previous April on record, and \$10,000,000 in excess of April, 1890. The greatest increase was in the item of free goods, which amounted to \$31,000,000. For four months the total imports is \$195,164,800, against \$179,000,000 in 1890. As to the balance of trade, as related to the specie movement, it is to be noted that the statement of the Bureau of Statistics of the foreign commerce of the United States, corrected up to April 29, shows that we exported merchandise to the value of \$697,917,229 during the nine months ended March 31, while the imports of merchandise during that period were only \$618,166,840, a balance in our favor of nearly \$80,000,000. As the exports of gold and silver during the nine months exceeded the imports by about \$11,500,000, this balance was increased to over \$91,000,000, an amount which, according

to reliable authorities, should have been ample to cover all possible payments to foreign shipowners and for securities.

The National Millers' Association, now in session in this city, will advocate a uniform bill of lading.

New York.

Office of The Iron Age, 96-102 Reade street,
NEW YORK, May 13, 1891.

American Pig.—Although some sellers profess to observe signs of gathering strength the majority in the trade report the market dull and quiet, with prices steady. The firmer feeling in the West and the drain of Iron from the South to that quarter are expected to tell ultimately on this market, particularly since Eastern Pennsylvania is called upon to send large supplies into territory usually taken care of, Central and Western Pennsylvania. Northern brands are quoted \$17 @ \$18 for No. 1, \$16 @ \$16.50 for No. 2, and \$14 @ \$14.50 for Gray Forge. Southern Iron sells at \$16.50 @ \$17.25 for No. 1, \$15.50 @ \$16.25 for No. 2, and \$14 @ \$14.50 for Gray Forge.

Spiegeleisen and Ferromanganese.—The market is lifeless and nominal. We quote 80 % Ferromanganese \$63.50 @ \$64.

Billets and Rods.—Against sales of about 8000 tons of Barrel Hoops, at private terms, for the Standard Company, a mill in Western Pennsylvania has purchased 8000 tons of 1½-inch Billets, delivery 1000 tons monthly, at \$30. Eastern mills quoted considerably above that figure. Referring once more to the trouble experienced by a Western mill with Billets, we are informed that the stock of Ingots came from another works, and that in at least one instance they had been rolled into Rods, which were rejected. Rods are \$38, at Eastern mill.

Steel Rails.—The lot of rails referred to in our last issue as having been sold by a mill not in the association turns out to be a parcel of Rails stored at the mill in question, belonging to a concern which had them rolled a long time since and had not used them. They are 66 lb Rails, West Shore drilling. The market in the East is absolutely lifeless. Prices remain firm at \$30 at Eastern mill and \$30.75 at tidewater.

Rail Fastenings.—We continue to quote Fish Plates 1.70¢ @ 1.75¢; Bolts, 2.65¢ @ 2.75¢, and Spikes \$1.90 @ \$1.95, delivered.

Manufactured Iron and Steel.—The only transaction of magnitude has been the closing of a contract for the approaches of the Brooklyn Bridge. Current New York deliveries are at a standstill for structural work, on account of the strike. There is a moderate amount of work in Plates. We quote Angles, 1.95¢ @ 2.10¢; Sheared Plates, 1.95¢ @ 2.25¢; Tees, 2.45¢ @ 2.75¢, and Beams and Channels, 3.1¢, on dock. Steel Plates are 2¢ @ 2.15¢ for Tank, 2.3¢ @ 2.6¢ for Shell, and 2.5¢ @ 2.7¢ for Flange, on dock. Bars are 1.7¢ @ 1.9¢, on dock.

Edward Corning & Co., Iron and Steel merchants, have moved to the new Columbia Building, 29 Broadway.

Warren Wood & Co., Pig-Iron merchants, occupy new offices in the Columbia Building, 29 Broadway.

R. Whitney & Co. will soon remove their offices to the second floor of the Columbia Building.

A. T. Rowand has resigned his position as vice-president and severed his entire connection with the Union Switch and Signal Company of Pittsburgh.

Metal Market.

Pig Tin.—The average of prices has been somewhat lower, and, despite the superficial support given by some few local speculators, assisted by favorable cable advices from London at various times, the market has presented a heavy, dull appearance. Local speculation is confined within a narrow circle, with a strong suspicion of "laundry work" in connection with some transactions recorded, and unmistakable evidence that the chief holders of the large supply here are on the alert to unload their burdensome supply when opportunity offers. The trade inquiry for round lots has been moderate and consumptive demand contrasts unfavorably with that of the preceding week. In fact, the market has looked top-heavy, and has no support whatever outside of that which may be given by the speculative element. Wednesday's cables from London came higher, and had the effect of stiffening prices somewhat in this market, 20½¢ having been paid for 25 tons for May, 20.20¢ for 25 tons for June and 20.10¢ for 25 tons for July delivery. At the close 20.20¢, net cash, was considered inside rate for 10-ton lots and 20.30¢ @ 20½¢ was asked for jobbing quantities.

Copper.—There has been no decided move by either buyers or sellers, but surface indications justify the statement that the market is dull and rather weak. Consumption shows no sign of improvement, but production continues on a large scale, and it is no secret that there is considerable accumulation of stock at first hands that has more or less weight, despite the assumed indifference of the representatives of the chief producers. Export outlet, except for furnace material, is very narrow. Home consumers buy only as imperative wants necessitate, and the latter are neither extensive nor urgent. At 13½¢ there seems to be more Lake Superior Ingot available than an outlet for can be found at the present time. Arizona Ingot, at 12½¢, is virtually a drug upon the market, and bids of ¼¢ to ½¢ less for round lots would probably not go a-begging. On common casting brands anything above 11½¢ is exceptionally high at the present time.

Pig Lead.—The situation differs in no particular from that noted a week ago. No improvement in the demand has taken place, nor is there any larger or more urgent offering from any quarter. In short, there seems to have been practically a stand-off between buyers and sellers throughout the week, with no advantage gained on either side thus far. Single carload lots would probably bring 4½¢. On the other hand, efforts to bring out bids of that price for larger quantities have proven futile, and, as far as buyers are concerned, supreme indifference is manifested.

Spelter.—Orders have been almost wholly for single carload lots, and few at that. Apparently consumers' requirements have not increased in the slightest degree, and the inquiry at the present time is not at all encouraging to expectations of an immediate turn for the better. Prime Western is offered at 4.85¢, in carload lots, for prompt shipment, and 4½¢ @ 4.90¢ would buy spot parcels. Common may be had at 4.80¢, or even less, in carload lots.

Antimony.—Prices have ruled lower on all brands, and the market is dull at the decline. Hallett's quoted at 15¢, LX at 15½¢ and Cookson's at 16¢, in wholesale quantities.

Tin Plate.—Business has been slow, and the market is unsettled, with prices for Cokes depressed. The uncertainty as

to the outcome of the heavy importations latterly and probable heavy receipts up to July 1 causes buyers to move very cautiously and neither spot stock or future deliveries are taken with any freedom except when some particularly attractive inducement on price is made. Quotations for large lots on the spot are as follows: Coke Tins—Penlan grade, 1C, 14 x 20, \$5.12½ @ \$5.15; J. B. grade, do., \$5.27½; Bessemer do., \$5.15 @ \$5.17½; Siemens Steel, \$5.35. Stamping Plates—Bessemer Steel, Coke finish, 1C basis, \$5.60 @ \$5.70; Siemens Steel, 1C basis, \$5.70 @ \$5.75; IX basis, \$6.85. IC Charcoals—Melyn grade, \$6.12½; for each additional X add \$1.50; Allaway grade, \$5.75 @ \$5.80; Grange grade, \$5.90; for each additional X add \$1. Charcoal Ternes—Worcester, 14 x 20, \$5.50; 20 x 28, \$10.50; M. F., 14 x 20, \$7.20; do., 20 x 28, \$15; Dean, 14 x 20, \$5.05; do., 20 x 28, \$10.10; D. R. D. grade, 14 x 20, \$4.85; do., 20 x 28, \$9.75; Mansel, 14 x 20, \$5; do., 20 x 28, \$9.85; Alyn, 14 x 20, \$5; do., 20 x 28, \$9.90; Dyffryn, 14 x 20, scarce; do., 20 x 28, \$10.50. Wasters—S. T. P. grade, 14 x 20, \$4.70; do., 20 x 28, \$9.30; Abercarne grade, 14 x 20, \$4.70; do., 20 x 28, \$9.25.

The following interesting facts appear in a circular to the trade, issued by C. S. Trench & Co.:

"As the probable prices that will rule during the summer and fall depend almost entirely on the surplus stocks that will be imported before July 1, and as a great many buyers are being misled in their calculations by the belief that this surplus will be enormous, we, for the guidance of our friends, would call their attention to the following indisputable figures: Shipments to United States during 1889, 5,650,000 boxes; shipments to United States during 1890, 5,300,000 boxes. This demonstrates that our stock, January 1, 1891, was small.

Shipments to United States January 1 to May 1, 1889, 2,050,000 boxes; add May shipments, 616,000 boxes. Total, 2,666,000.

Shipments to United States January 1 to May 1, 1890, 1,350,000 boxes; add May shipments, 508,000 boxes. Total, 1,858,000.

Shipments to United States January 1 to May 1, 1891, 2,475,000 boxes; add May shipments, 700,000 boxes, estimated. Total, 3,175,000.

"In other words, 1,217,000 boxes more than last year, and only 500,000 boxes more than the year before.

"We feel, therefore, more positive than ever that at the utmost the stock of Tin Plates in America July 1 will not exceed two and one-half months' average consumption. Only five weeks remain during which shipments can be made to reach us in time for entry under the present duty. Shipments made after that time must pay extra duty of \$1.30 for every box IC 14 x 20, \$1.64 for every box IX 14 x 20, \$2.60 for every box IC 20 x 28, \$3.28 for every box IX 20 x 28, and other sizes in proportion.

"Should Plates in England decline to the lowest price on record, under the McKinley duty they will cost for Chl. Ternes and Cokes 30¢ to 50¢ per box on 14 x 20, 50¢ to 90¢ per box on 20 x 28 more than they can be bought for at present, and this lowest price on record plus the McKinley duty must be the lowest basis we can hope for when, having exhausted our stocks, we have to import fresh supplies. This is the only answer we can give to the repeated inquiries whether we think present prices cheap, and what will be the prices after the McKinley bill goes into effect."

New York Metal Exchange.

The following sales are reported:

THURSDAY, May 7.

25 tons Tin, June.....	20.05¢
50 tons Tin, last 5 days of May.....	20.05¢
50 tons Tin, May.....	20.05¢
75 tons Tin, last half June.....	20.10¢
25 tons Tin, June.....	19.85¢
(With seller's right to double.)	
25 tons Tin, May.....	20.00¢
(Buyer's option, one day's notice.)	

FRIDAY, May 8.	
20 tons Tin, June.....	30.00¢
25 tons Tin, July.....	30.05¢
25 tons Tin, June.....	30.95¢
(Seller's right to double.)	
10 tons Tin, September.....	30.15¢
10 tons Tin, October.....	30.15¢
MONDAY, May 11.	
10 tons Tin, June.....	19.80¢
(Seller's right to double.)	
10 tons Tin, June.....	19.85¢
(Seller's right to double.)	
10 tons Tin, June.....	19.90¢
TUESDAY, May 12.	
30 tons Tin, spot.....	20.00¢

Coal Market.

Operators claim that the Anthracite Coal market is in better shape than for a long time past, as the official schedule of prices more nearly approximates to actual sales. The six companies claim that prices are strictly maintained, and that individuals cut only to the extent of commission off. Free Burning is quoted, Broken, \$3.50; Egg, \$3.60; Stove, \$3.75; Chestnut, \$3.50. More inquiry for Coal indicates a prevalent belief that probably the bottom has been touched. Report says that at the approaching meeting of Coal agents no change will be made. Furnace Coal is said to be somewhat improved on account of a better tone in Iron manufacture. Production for the week was 783,000 tons; increase over last year, 1,925,772 tons; production for year, 11,079,914 tons. The Reading tonnage for the week was 190,000 tons. The Pennsylvania Railroad Coal tonnage for the week was 269,580 tons; Coke, 50,064 tons. The Coal tonnage since January 1 on that road was 4,756,803 tons. The Clearfield bituminous production for the week was 64,114 tons.

Bituminous producers represent that the state of trade is normal, there being Coal enough at regular prices. The strikers are spoken of as "back numbers."

There was a resumption of work in the Schuylkill Coal fields on Monday, at the Middle Creek, which has been idle for over a year; Preston No. 3, North Ashland, North Franklin, Bear Valley and Richardson Collieries. These mines have been idle for several months. Over 3000 miners were given employment.

The statistics of coal production in Illinois during the year ending July 1, 1890, show the value of Coal raised to be \$12,884,000. The tonnage was 12,638,000. Over 28,500 people were employed, and the average price paid for mining declined from 73¢ a ton to 68¢ a ton during the year.

The fire in the Lehigh Coal Company's No. 4 Colliery, at Summit Hill, Pa., is still burning, and flooding will be necessary.

Important Coal discoveries are announced at Forest City, Pa., where the Elk Hill Coal Company are preparing for large developments, and the Northwest Coal Company, in Upper Lackawanna, are said to have discovered a vein 14 feet thick.

The fourth annual excursion of the New York and Brooklyn Coal Exchanges will take place May 26, 27 and 28.

The once famous turreted monitor Saugus has arrived at Philadelphia to be converted into a coal barge. She was purchased for \$15,000.

More Bituminous Coal has been taken from Baltimore for Hamburg at 8/ 7/ 2 ton, and is understood to be going out for use in American cooking stoves in Germany.

PITTSBURGH.

(By Telegraph.)

There is nothing new in the Iron situation here. One of our brokers just back from the Mahoning Valley district reports business very quiet there. He says that

stock of Pig Iron in hands of sellers is very much reduced, and he could hear of but one lot of Bessemers, but there does not appear to be much wanted. Even if the Coke strike was over but few of the furnaces would be started up, unless the price of Coke and Ore was reduced, with lower freight rates. Mr. H. W. Oliver, of Oliver Bros. & Phillips, one of our best authorities in regard to Iron and Steel, reports business as being quiet for the season.

British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, May 13, 1891.

Operations in Pig Iron warrants have been chiefly between regular traders, and the movement of prices has hinged largely upon the standing of long and short accounts. Very little outside interest is manifested. It is asserted that the bulk of the available supply of warrants is concentrated in few hands, and, with no addition to stocks in public stores, the amount of warrants continues to steadily diminish in the face of larger furnace capacity and moderate shipments. Exports last month were only 64,000 tons, against 123,000 tons in April, 1890. Latest transactions in warrants were at 49/3 for Scotch, 40/ for Cleveland and 50/ for Hematites, or the highest figures reached during the week under review.

The Pig Tin market has been weaker, and prices have fallen about 17/6 per ton, under the influence of depression in other lines. Futures ruled below prompts at intervals, owing chiefly to anticipated slackness in the demand from Tin Plate manufacturers later on, spot parcels having had more or less support from the moderate stock on hand, which is held with some confidence.

Copper warrants have fallen about £1, chiefly under the influence of complicated condition of affairs on the Continent. Speculation is almost at a standstill for the present, and purchases by consumers are unimportant.

In Tin Plate there has been a fair volume of business, the outcome chiefly of a reduction of 6d in the price of Bessemers by makers who have a considerable stock on hand. Charcoals are exceptionally firm, although in moderate demand. The total supply at shipping ports is now about 505,000 boxes, against 434,000 boxes a year ago. Shipments in April were 52,000 tons, or 21,000 tons more than during the corresponding period last year. Of last month's export 45,000 tons went to the United States.

Somewhat better reports come from several branches of the Steel trade, but the improvement is not broad enough to have any pronounced effect upon finished productions or to influence the market for crude materials used in that line.

No change is visible in the market for Old Iron of any description. Inquiries are few and buyers and sellers ideas are wide apart.

Scotch Pig Iron.—For makers' Iron the demand shows little change and prices are without important variation:

No. 1 Coltness, f.o.b. Glasgow.....	63/
No. 1 Summerlee, " ".....	60/
No. 1 Gartsherrie, " ".....	60/
No. 1 Langloan, " ".....	63/
No. 1 Carnbroe, " ".....	51/
No. 1 Shotts, " at Leith.....	62/
No. 1 Glengarnock, " Ardrossan.....	59/6
No. 1 Dalmellington, " ".....	52/6
No. 1 Eglinton, " ".....	50/6
Steamer freights, Glasgow to New York, 2/;	
Liverpool to New York, 10/.	

Cleveland Pig.—The demand does not improve a great deal, but the rise in warrants gives the market more tone, and makers now quote 39/3 for No. 3 Middlesborough, f.o.b.

Bessemer Pig.—There has been a larger business with consumers and the market is stronger. Makers quote 52/6 for West Coast brands, Nos. 1, 2 and 3, f.o.b. shipping port.

Spiegeleisen.—Demand is very fair and prices are steady, with English 20 % quoted at 95/ @ 97/6, f.o.b. shipping port.

Steel Rails.—Business very fair, but competition keen and prices somewhat irregular. Heavy sections quoted £4. 10/, and light sections £5 @ £6, f.o.b. at N. W. England shipping point.

Steel Blooms.—In this line the movement is slow and prices are barely steady. Makers ask £4. 5/ for 7 x 7, f.o.b. at N. W. England shipping point.

Steel Billets.—Makers are firm at old prices, but the demand is moderate. Bessemer, 2½ x 2½ inches, quoted at £4. 10/, f.o.b. at N. W. England shipping point.

Steel Slabs.—There is little doing, but prices remain quite steady. Bessemer quoted at £4. 10/, f.o.b. at N. W. England shipping point.

Old Iron Rails.—Demand has fallen off and some holders offer at reduced prices. Tees quoted at £2. 17/6 @ £3 and Double Heads £3 @ £3. 2/6, f.o.b.

Scrap Iron.—Supplies are moderate and holders firm on prices, although demand is slow. Heavy Wrought quoted at £2. 10/, f.o.b.

Crop Ends.—Business slow and prices unchanged. Bessemer quoted at £2. 15/ @ £2. 17/6, f.o.b.

Tin Plate.—The demand is irregular, and prices are unsettled at the close. We quote, f.o.b. Liverpool:

IC Charcoal, Alloway grade.....	19/ @ 19/3
IC Bessemer Steel, Coke finish.....	16/3 @ 16/6
IC Siemens.....	16/6 @ 16/9
IC Coke, B. V. grade.....	16/ @ 16/3
Charcoal Terne, Dean grade.....	16/9 @ ..

Manufactured Iron.—The movement in this line is slow and prices still favor the buyer. We quote, f.o.b. Liverpool:

	£ s. d.	£ s. d.
Staff. Marked Bars.....	8 10 6	
Common ".....	6 7 6	
Staff. Bl'k Sheet, singles.....	6 15 6	
Welsh Bars (f.o.b. Wales).....	5 12 6 @ 5 15 0	

Tin.—Free buying gives the market stronger tone at the close, with spots at a premium. Straits quoted at £91. 7/6, spot, and £91. 5/ for three months' futures.

Copper.—There is a stronger feeling at the close and more demand. Merchant Bars quoted at £51. 5/, spot, and £51. 12/6, three months' futures. Best Selected, £56/.

Lead.—The market quiet and prices are unchanged. Quoted at £12. 12/6 for Soft Spanish.

Spelter.—A fair business and the market steady, at £22. 17/6 for ordinary Silesian.

HARDWARE.

Condition of Trade.

A BETTER TONE still characterizes the market, as at our last report. The improvement is scarcely perceptible in prices, which continue substantially as before, and in several staple lines are low and irregular. There are, however, some indications of a slightly improved tone. There has been within the last week or two an evident increase in the volume of business, and Hardware men are placing their orders with more freedom, without, however, going beyond their early requirements. The condition of the market is such that it is closely scrutinized by larger buyers, who are canvassing the question as to whether anything is to be gained by longer delay in placing their orders. Some lines of goods which are exceptionally low are receiving their special attention, and we have advice that some of the large Western jobbing houses who have been holding aloof have recently been placing orders. The market is thus in a somewhat critical condition, and there are those who think that sluggishness in trade and low prices will characterize it for some time. There are others, however, who take a more cheerful view of the situation, and are confident that there will be, before long, a marked improvement in business, and that unless some unforeseen disturbing element enters into business the fall trade will be exceptionally large and satisfactory. While the financial situation is not regarded in a way to cause disquietude, there is a good deal of complaint concerning collections.

Chicago.

Shelf Hardware jobbers report their trade as steadily improving. It is now quite active, but of course falls below what the season would warrant if the farmers were not so busily engaged in seeding. The special feature this week has been the weakness in Nails. Sales are being made from stocks here at unusually low prices, with demoralizing effect. The city trade seems to be specially favored so far, but it is hard to see how the movement can be confined to the city. Roofing Plates are still weak, and concessions are being made from regular prices. Otherwise the market is quite steady. In Heavy Hardware trade is very active. The demand from city consumers of Iron, Steel, Wagon Supplies and Saddlery Hardware is exceptionally strong, and foreshadows a vigorous country trade in the near future. Sheet Copper is being cut by some sellers, and the list is in a fair way to be wholly disregarded. Rumors are current of absurdly low prices having been made.

St. Louis.

(By Telegraph.)

The Hardware trade continues to be moderately active. Salesmen are sending in good round orders, and report the prospect as unusually encouraging. Prices do not show any particular change, and are on the whole well maintained. The demand for Building Tools and Materials continues to be heavy. Screen Wire, Fly Traps, Ice Cream Freezers and other seasonable goods are moving freely. Barb Wire is active at full prices. Wire Nails continue weak. Cut Nails fail to show any improvement. The present conditions indicate a steadily increasing trade in all lines, with prices showing a tendency to advance rather than otherwise. Collections are above the average.

Notes on Prices.

Wire Nails.—The general demand for Wire Nails is only moderate, but since our last review some heavy orders have been booked by large manufacturers, who are therefore disposed to offer their extreme prices less freely than a week or two ago. There is, however, some unevenness in the quotations of the different mills, but there is little doubt that the extreme prices named by some will be withdrawn as soon as orders which they are desirous of securing are obtained. On the whole the market has perhaps a slightly better tone than at our last report. Quotations are still on the basis of \$2, in round lots at mill, smaller parcels being obtainable at \$2.10 @ \$2.15. Retail lots from store are quoted at \$2.25 @ \$2.30.

Chicago.—Wire Nails are weaker and prices have gone to lower depths than ever before. It is known that quotations of \$1.90 @ \$1.95 at Ohio factories have been made, but so far as known here they have not led to much business except in car-load lots, which class of trade is fairly active. Jobbers quote small lots from stock at \$2.25 down to \$2.20.

Cut Nails.—There is little change to note in the Cut-Nail market. Prices continue low and unsatisfactory, with only a moderate amount of business. There is, however, evidence that some of the mills are disposed to name their extreme quotations less freely. Quotations are on the basis of \$1.55 to \$1.60 at mill in round lots, with a 35 or even 30 cent average. Small lots from store in New York are held at \$1.75 to \$1.85 for Iron and Steel, with concessions on especially desirable orders. There is a somewhat increased local demand.

Chicago.—Steel Cut Nails are rather quiet from the manufacturers' standpoint. So far as known Chicago seems to be at once about the dulllest and weakest point for Cut Nails in the country. They have been offered here as low as \$1.65 for an ordinary average. Some of the principal makers now refuse to quote for Chicago

delivery, as they claim to be able to get much better prices elsewhere. Quotations from store range from \$1.75 to \$1.85, according to quantity and quality.

Barb Wire.—The Barb-Wire market continues without special feature. The volume of business is not heavy, but prices are well maintained. They are on the basis of \$3.50 for Four-Point Galvanized and \$2.95 for Painted, with the regular abatement of 10 cents for carload lots and 5 cents for jobbers and railroads; terms 60 days, or 2 per cent. discount for cash in ten days, with delivery at leading points.

Chicago.—Barb Wire shows no change, except that the demand is somewhat better. Heavy buyers, however, are disposed to hold off and await developments before renewing their expiring contracts.

Wire.—There is some reaction from the low prices which have for some time been ruling on Plain Wire, and the market may be referred to as slightly firmer, without being quotably higher. Manufacturers are more guarded in making their quotations, intimating that prices are subject to change without notice, and they are also reluctant to accept orders for future delivery at the extreme prices recently ruling.

Cordage.—The market in Cordage is in a very unsettled state and prices are lower, uneven and with a downward tendency. The following are the manufacturers' present prices, subject to an abatement of 4¢ per pound, f.o.b. factory:

Manila, $\frac{1}{2}$ inch and larger.....	lb 10 $\frac{1}{2}$ ¢
Manila, $\frac{3}{8}$ inch.....	lb 10 $\frac{1}{2}$ ¢
Manila, $\frac{1}{2}$ and 5-16 inch.....	lb 11 $\frac{1}{2}$ ¢
Manila, Tarred Rope.....	lb 9 $\frac{1}{2}$ ¢
Manila, Hay Rope.....	lb 10 $\frac{1}{2}$ ¢
Sisal, $\frac{1}{2}$ inch and larger.....	lb 7 $\frac{1}{2}$ ¢
Sisal, $\frac{3}{8}$ inch.....	lb 7 $\frac{1}{2}$ ¢
Sisal, $\frac{1}{2}$ and 5-16 inch.....	lb 8 $\frac{1}{2}$ ¢
Sisal, Hay Rope.....	lb 7 $\frac{1}{2}$ ¢
Sisal, Tarred Rope.....	lb 6 $\frac{1}{2}$ ¢
Sisal, Medium Lath Yarn.....	lb 6 ¢

The volume of business is referred to as small, purchasers evidently being under the impression that it is safe to defer purchases except for present requirements. The low prices which are ruling are the result of very animated competition between the National Cordage Company and the outside manufacturers. The impression prevails that the National Cordage Company are endeavoring to induce the outsiders to come into the combination, and with a certain degree of success, as one or two of them are understood to be on the point of doing so. Others, however, representing ample capital and in excellent condition for business, are apparently determined to continue in the market on their own account, so that there is at present no indication of an early termination of the present condition of things.

Nail Pullers.—M. D. Converse, 90 Nassau street, New York, agent for Eclipse Nail Puller, quotes it at \$18 per dozen, subject to a discount of 30 per cent.

Tacks.—The Tack market is characterized by the same general features as have marked it for some time, and prices are irregular and slightly lower. The consolidation of some of the leading manufacturers as the Atlas Tack Corporation has not at yet had any perceptible effect on the market, and, in fact, the corporation disclaim any expectation of advancing prices, the object of their organization being rather to consolidate interests, and thus, through economies in the manufacturing and marketing of goods, to secure advantages in the conduct of the business. The trade are still subjected to a good deal of annoyance on account of the lack of uniformity in base discounts, which makes it rather a troublesome matter to compare the prices of the different makers. It would conduce very much to the comfort of the trade if there could be some agreement in regard to this matter.

Brass Goods.—The market in such goods as Copper Rivets and Burrs, Brass and Copper Wire, &c., is characterized by a rather weak tone and lower prices have recently been announced.

Tinware.—Some of the manufacturers have recently been offering Tinware, Stamped and Pieced, at somewhat lower quotations than have recently been ruling. This is understood to have been done on account of accumulated stocks and the sluggishness of trade. As a result some business has been induced. While it is not easy to predict the course of the market, it is intimated that such reduced quotations may soon be withdrawn.

Stove Boards.—Prices are weak and uneven, owing to the dissolution of the combination, to which we recently referred. There is some uncertainty as to the course of the market during the summer, and it is thought not unlikely that some agreement may be reached by the manufacturers.

Glass.—There is no change in the Window Glass situation since our last report. Some business is being done by the jobbers in a small way, but nothing that indicates a permanent revival of activity in the Glass trade. It is hoped, however, that after the labor troubles are settled and building can be carried on without interruption an improvement will be noticed in the demand for Glass. Collections continue unsatisfactory, and there is a tendency on the part of some dealers to buy to the utmost limit of the credit that will be accorded them. Reports from Pittsburgh indicate an improvement at various points, with a feeling that some of the Glass factories may run to the end of the season—that is, till July 1. Prices remain unchanged and are quoted as follows: American Window Glass, for carloads, 80 and 10 per cent. discount; less than car lots, 80 and 5 per cent. discount; French Window Glass, 75 and 10 per cent. discount, with an additional 5 per cent. discount when 50 boxes are ordered and taken in any calendar month. American Plate is held at discount 50, 10 and 5 per cent., and Imported Plate at discount 60 per cent.

Cycles.—Gendron Iron Wheel Company, Toledo, and 107 Chambers street, New York, announce that owing to competition in the Bicycle market and also their desire to have their machines more largely introduced, they have made a reduction in the prices of these goods. They state that as they have material on hand and unsurpassed facilities for manufacturing they are offering their Cycles at these sacrificed prices. Their business is done largely with the wholesale Hardware trade, and they advise us that they are now somewhat behind on their orders.

Carpenters' Chalk, &c.—The following are the present prices of Chalk Crayons and Carpenters' Chalk manufactured by American Crayon Company, Sandusky, Ohio:

Chalk Crayons.—(100 Gross in Case.)

Manufacturers' and dealers' minimum selling prices.	50 cases and over, per case.	25 to 49 cases, per case.	10 to 24 cases, per case.	5 to 9 cases, per case.	1 to 4 cases, per case.	50 to 99 gross, per gross.	Less than 50 gross, per gross.
White, Round.....	\$7.25	\$7.37	\$7.50	\$7.75	\$8.00	\$0.00	\$0.10
Yellow Enameled, Round.....	8.35	8.50	8.65	8.95	9.50	.10	.12
Pink Enameled, Round.....	8.90	9.05	9.20	9.50	10.10	.11	.13
Purple Enameled, Round.....	8.90	9.05	9.20	9.50	10.10	.11	.13
White, Pyramido.....	7.80	7.95	8.10	8.40	9.00	.10	.12
Yellow Enameled, Pyramido.....	8.90	9.05	9.20	9.50	10.10	.11	.13
Pink Enameled, Pyramido.....	9.50	9.67	9.75	10.05	10.75	.12	.15
Purple Enameled, Pyramido.....	9.50	9.67	9.75	10.05	10.75	.12	.15

Carpenters' Chalk.—(25 Gross in Case.)

Manufacturers' and dealers' minimum selling prices.	10 cases and over, per gross.	5 to 9 cases, per gross.	3 to 4 cases, per gross.	2 cases, per gross.	1 case, per gross.	Less than 1 case, per gross.
White.....	\$0.38	\$0.40	\$0.43	\$0.45	\$0.50	\$0.65
Red.....	.58	.60	.62	.64	.67	.90
Blue.....	.66	.68	.70	.72	.75	1.00

Butcher Knives.—A. Eberly, Canton, Ohio, has for several years been manufacturing Butcher Knives for the trade in his vicinity, but in response to an increased demand he has recently enlarged his facilities and also his line of goods, so that he is now prepared to supply them to the trade at large in limited quantities. Especial emphasis is laid on the quality of the goods. They are sold from the following list, which is subject to a discount of 50 per cent.:

Butcher.						
Nos.....	10	11	12	13	14	15
Size.....	5 1/4 in.	6 in.	6 1/4 in.	7 in.	8 in.	9 in.
Per dozen	\$3.35	\$3.00	\$3.90	\$4.50	\$6.00	\$7.95
Steak.						
Nos.....	20	21	22	23	24	
Size.....	10 in.	11 in.	12 in.	13 in.	14 in.	
Per dozen	\$9.90	\$11.55	\$12.90	\$14.70	\$17.00	
Skinning.						
Nos.....	30	31	32	33	34	
Size.....	5 in.	5 1/4 in.	6 in.	6 1/4 in.	7 in.	
Per dozen	\$3.30	\$3.60	\$4.05	\$4.50	\$5.25	
Sticking.						
No.....	40					
Size.....	6 in.					
Per dozen	\$3.60					

THE LAKESIDE NAIL COMPANY have removed their Chicago office from the Phoenix Building to room 647, in the Rookery.

The Atlas Tack Corporation.

THE NEGOTIATIONS which have been progressing between some of the leading Tack manufacturers has been successfully consummated in the formation of the Atlas Tack Corporation with a capital stock of \$700,000. This corporation is composed of the following concerns, some of whom, it will be observed, are among the oldest Tack manufacturing concerns in the country:

Dunbar, Hobart & Company, established in 1810.

Loring & Parks, established in 1842.

American Tack Company, established in 1867.

Taunton Tack Company, established in 1854.

The corporation have also purchased the Tack business of A. Field & Sons, Taunton, Mass., which was established in 1827, and as a result of such purchase a well-known and prominent house disappear nominally from the trade, but some of those identified with its interests will be still connected with the Atlas Tack Corporation. The following are the officers of the corporation:

President, Henry Hobart, East Bridgewater, Mass.

Vice-President, Thomas J. Lathrop, Taunton, Mass.

Treasurer, John H. Parks, Plymouth, Mass.

Clerk, Joseph Pettee, Jr., Whitman, Mass.

These officers, together with Cyrus D. Hunt of Fairhaven, form the Board of Directors of the corporation. It is understood that most of the different factories will be continued in operation, the business being so systematized as to produce the goods to the best advantage. The separate offices in New York City will be discontinued, the office of the corporation being in the premises recently occupied by the American Tack Company,

ON THE OCCASION of President Harrison's visit to Seattle, Wash., on Wednesday, May 6, the Seattle Hardware Company of that city issued a neat silk badge commemorative of the event. A portrait of the President is given, together with some data of national interest.

JAMES W. EAGER'S HARDWARE ESTABLISHMENT at Syracuse, N. Y., was destroyed by fire on the 7th inst. The building was finished only a year ago and cost \$30,000, on which there is an insurance of \$18,000. The insurance on the stock and fixtures which are either entirely destroyed or seriously injured is \$29,500, which is thought to be about two-thirds of their value. The burned building, the first and second stories of which were 61 x 146 feet and the third and fourth 61 x 84 feet, was well constructed, and more than usual precautions had been taken to avoid fire. It was heated by steam furnished by an outside corporation. The first floor and basement were occupied by Mr. Eager, the floors above being occupied by tenants of various lines, who were supplied with power by an engine in the basement driven by the steam above referred to. How the fire originated is thus unaccountable. It is Mr. Eager's purpose to rebuild at once. He is now located temporarily at 315 Franklin street, where a portion of his stock will be carried, the balance being in the rear of the ruined building. Mr. Eager expects to give prompt attention to all orders after a few days, as there were fortunately some goods in transit, while he has also been greatly aided by the courtesy and practical assistance extended by his competitors in Syracuse.

KING & GODDARD, Boston, Mass., are putting on the market the Hall Hose Mender. It can be applied without tools, except a knife to make the ends of the hose smooth and sound. The screw thread is described as running continuously from one end to the other. The ends of the Mender are inserted in the hose and the hose turned with the hands. It is claimed that the Mender is not only convenient, but that a joint made with the Mender will stand more pressure than the hose. They also issue a circular relating to the Perfection Sprinkler, designed for lawn and garden. This is made in forms adapted for either iron pipe or lawn hose.

THE OLD COLONY RIVET COMPANY, Kingston, Mass., have appointed J. C. McCarty & Co., 97 Chambers street, New York, agents, who will carry a full stock of their manufactures, on which they are in a position to offer the best terms.

DAME, STODDARD & KENDALL, 374 Washington street, Boston, issue a circular notifying the trade that the word Hub and the figure of a hub, as applied to cutlery, whether used together or alone, or in connection with other words, are their trade-marks. They state that they are putting on the market a superior line of Pocket Knives and Razors under the following brands:

TRADE
"HUB"
MARK.
D S HUB
S HAND
K HAMMERED

They advise us that while this is not a new trade-mark for them, they have just commenced giving it special prominence. They are sending out a new show card designed to hang in stores, on which is a picture of their Hub trade mark, in connection with their name and the words American Pocket Knives. In putting this line of Pocket Knives and Razors on the market it is their aim to give to the American people a line of Cutlery that will be not only attractive, but of such a high grade of Steel as to be capable of taking and holding a fine cutting edge. Attention is directed to their advertisement in this issue, relating to their Hub Toilet Clippers.

THE W. J. PRATT HARDWARE COMPANY, New Whatcom, Wash., formally opened their new and commodious store on Monday, May 11. The store is an attractive one and especially adapted to the requirements of the Hardware business.

UNTIL OCTOBER 3, the office and warehouse of American Tube and Iron Company, 98 John street, New York, will close on Saturdays at 12 o'clock, noon.

BY AN ERROR in the advertisement of Joseph Lay & Co., Ridgeville, Ind., in the last *Iron Age*, the cut of their No. 6 all corn Broom was used to represent their No. 4 rattan and corn mixed Broom. The error has occasioned the manufacturers serious trouble, in that they are requested to furnish the Broom illustrated at the price of the No. 4. As the trade are aware, the No. 6 Broom, being all corn, is a much better Broom than the latter, and is accordingly listed at a higher price. The trade will please note the correction.

SPRAGUE BROS., Greenville, Mich., issue a handy book of valuable and useful information, "One Thousand Facts Worth Knowing." This book is carefully prepared by them, and is distributed free to their customers, about 2000 being given away during the year. The right-hand pages throughout the book are devoted to advertising their goods, while the left-hand pages are filled with information. They state that they take this way of informing their customers and the public generally that they still lead in the Hardware trade in Greenville.

Hardware and Stove Dealers' Association.

THE REGULAR MEETING of the Hardware and Stove Dealers' Association was held at the rooms of the Mechanics' and Traders' Exchange, 363 Fulton street, Brooklyn, on the evening of May 12. Letters from many prominent dealers, indorsing the movement, were read, from New York, Jersey City, Hoboken, Weehawken and other points in New Jersey; also from Troy, Long Island City, Whitestone, Jamaica, Flatbush and other towns. Several gentlemen decided to canvass their localities to urge the indorsement of the action of the meeting by refusing to buy from all wholesale dealers who interfere with the legitimate rights of retailers. The initiation fee was placed at \$2, with monthly dues of 25 cents. Robert Anderson of Jersey City was unanimously elected permanent secretary. An encouraging financial report was made by the treasurer. After remarks were made by a large number of the members, the meeting adjourned, to meet at the same place on the evening of May 26, at 8 p.m. sharp.

R. H. Dana & Co.

WE ARE ADVISED by R. H. Dana & Co., 25 Beaver street, New York, that May 1 a new corporation under the same name was formed, George W. Wylie of Chicago becoming a new partner in the firm and giving a largely increased capital. Concerning their plans for the prosecution of their business as representatives of manufacturers to the export trade they advise us as follows:

We intend to make a vigorous push in all foreign markets in the interests of our manufacturing houses, selling to the im-

porters direct and bringing our goods as near as possible to the markets in which their goods are sold. We open a London office this month and will travel through the markets of South Africa during the summer. We have increased our force now operating in Sydney and are in a position to give satisfaction to manufacturers desiring to place their goods in the markets worked or who wish to have competent men to attend to the trade already established. We have recently added a number of new lines, particularly in our specialty department, representing the Loring & Blake Organ Company, the Seely Mfg. Company of Detroit, Mich., perfumers, the Dawes Mfg. Company of Pittsburgh, Pa., and others. We sell our goods at manufacturers' prices absolutely, receiving our pay for what we do from them. We furnish our houses all information regarding the trade that we may have. This is not done by any other house in the business and for years the most prominent manufacturers in the country have not had the slightest knowledge of the markets that have taken their goods, having been kept in ignorance as far as possible. We guarantee all accounts—that is, pay cash for all orders received by our own manufacturers from our customers—and will take pleasure in further explaining our methods to manufacturers interested. The list of houses we represent we believe is a guarantee that manufacturers wishing to be represented will have justice done their accounts.

The list of houses represented by R. H. Dana & Co. includes the manufacturers of a large and varied line of goods, and among them are a number of large concerns occupying a leading place in the trade.

South Dakota.

THE FOLLOWING report of the condition of trade in South Dakota will be of interest as enabling our readers to judge of the condition of things in that State. While business is at present quiet on account of the failure of crops for the last two years, it will be seen that our correspondents take a hopeful view of the outlook, provided the expectations in regard to the crops are not disappointed:

The prospects for trade during the next few months will depend very much on the turn of the rain prophet. Crops are growing splendidly at present, and six or eight weeks will either make or break everybody, as another failure of crops would drive all the inhabitants out of this part of Dakota, while a few good rains at the right time during the next few weeks will give them all a fresh start, and having learned a good lesson, they will probably not go to extremes recklessly as they did after the great crop of 1888, and be better able to stand losses by droughts. There are no prospects for building until crop is assured. Collections are almost impossible until fall. We sell for cash, and never have any necessity to collect. All through the James River Valley, eastern edge of North and South Dakota, had very good crops last two years, and prosperity tapers off every range of longitude westward. We are very hopeful, however, at present.

It Is Reported—

That Pipp Bros. & Martindale, Kalkaska, Mich., have disposed of their Hardware, Stove, Gun and Agricultural Implement business.

That the firms of J. J. Bailey, dealer in Stoves and Hardware, and that of E. F. Pierce, dealer in Furniture, Carpets, &c., both of Leominster, Mass., have been consolidated.

That the Hardware storehouse of Clark Ellis & Sons, Milford, Mass., was destroyed by fire 4th inst. Loss, \$5000; insurance, \$1000.

That C. E. Busby will open a Hardware store at Fort Gratiot, Mich., at an early date.

That Robert Royal has bought the Hardware stock of David Smith, Richmondville, N. Y., and has taken possession of the store.

That J. F. Kelley has decided to open a Hardware and Stove store in the Grand Army Building, Gardiner, Maine.

That the Hardware firm of Cushman & Linenfelser has been dissolved and Mr. Linenfelser will continue the business.

That C. Duras, Crete, Neb., has bought back the half interest in the Hardware store in that town which he sold a few weeks since to Mr. Bata.

That E. P. Cudworth will be the proprietor of a new Hardware store at Armada, Mich.

That John Sturkin has purchased a half interest in the Hardware establishment formerly owned by Foster Bailey, Logansport, Ind.

That Irving Corwin of Rochester, N. Y., has entered into partnership with A. Hawkins of Geneva, N. Y., and will engage in the Hardware business at the latter point. The firm will occupy a large store on Exchange street and probably do a wholesale business in connection with the retail.

That H. Schleusener's Hardware store at Little Falls, Minn., was burglarized 29th ult. and \$500 worth of Knives and Revolvers taken.

That A. Parmalee has sold his interest in the York Hardware and Steam Heating Company, York, Neb., to his partner, Mr. Davenport.

That Parkhurst Bros., Nunica, Mich., have a large force working on their new Hardware store, which will soon be ready for occupancy.

That Backus & Scott have succeeded to the Hardware business of Stilson & Dibble, Franklin, N. Y.

That Alexander Flaitz, Hardware, has sold out his business to N. D. Knox.

That C. R. Loveland, Gouverneur, N. Y., has sold his stock of Hardware to his brother, L. Loveland of Potsdam, N. Y.

That Mrs. Parker has sold her interest in the Hardware firm of Cutler & Parker at Waterloo, Iowa. The firm will be succeeded by the Cutler Hardware Company.

That G. L. Manning & Son, Hardware, Bucoda, Wash., have disposed of their business to G. A. Utter & Son.

That E. O. Bacon of Oakdale, Mass., has bought out the Hardware business of Brown & Reed at that point and will continue it at the old stand. Messrs. Brown & Reed have bought out a firm in Manchester, N. H., and will remove to that city.

Price-Lists, Circulars, &c.

C. T. WILLIAMSON WIRE NOVELTY COMPANY, Newark, N. J.: Cork Screws in large variety; Wire Ceiling Coat and Hat Hooks; Wire Drugget Tacks, Stair Buttons, Picture Nails, Card Holders; Wire Swab and Soap Holder, &c. Special attention is called to their Duplex Power and also to their Crucible Steel Cork Screws. They refer to the established reputation of their Cork Screws as regards quality of steel and the temper. A trade-mark has been adopted which is put upon every box containing their first-class goods, which they warrant in every respect as A No. 1, being made of the finest crucible steel.

L. W. FERDINAND & CO., Boston, Mass.: Heavy and Ship Chandlery Hardware, Tackle Blocks and Cordage, Ship Chand-

lery, &c., also agents for Shelton Brass Hardware Company. A well-arranged and well-printed catalogue of over 200 pages, illustrating the above lines, with price-lists, indicates the increasing business of this firm. They have recently added an annex to their store for the express purpose of exhibiting Steam Launches, Combination Row and Sail Boats, St. Lawrence Skiffs, Paddling and Sailing Canoes, Whitehall Rowboats and Lapstreaks, Life Boats, Dories, Skiffs, &c. They have been appointed Eastern agents of the Bowditch Mfg. Company, Skaneateles N. Y.

MICHIGAN EMERY WHEEL COMPANY, Detroit, Mich., and Chicago: Costain Corundum Wheels. The manufacturers describe these Wheels as manufactured by the Costain process, thereby insuring strength, uniformity and perfect balance, and state that all their component parts possess cutting qualities, consequently are not liable to glaze and heat steel; that they are fast cutting, therefore economize labor; that by reason of uniform density, which enables them to wear true, and their freedom from glazing, the necessity of frequent dressing is obviated, and that they will run in oil or water without injury.

JOHNSTON & JENNINGS, Cleveland, Ohio: Center-Eye Sash Weights, Cast Washers and general Casting. The manufacturers state that they make all of their regular sized Weights, heavier than eight pounds, Double-Eye Weights, having their center eye in one end and the common staple eye in the other. These Double-Eye Weights are referred to as having many advantages, and as especially useful for making heavy weights by linking two or more together. The above firm make a specialty of rough castings.

HOPKINS & DICKINSON MFG. COMPANY, 83 Reade street, New York: No. 11 Price-list, under date of May 5, 1891. This pamphlet includes prices of all goods illustrated in their new catalogue of 1890, and also all new goods made by them since then. A noticeable feature of this price-list is that it is numerical in its arrangement as well as descriptive, which adds greatly to its convenience. On the front page is an illustration of their patented Screwless Spindle, which is referred to as becoming very popular.

O. L. HINDS, East Highgate, Vt.: Scythes and Axes. In referring to the quality of these goods the manufacturer states that they are made from the best materials only and in the most careful manner. It has been his aim to place upon the market an Axe that would be superior in finish, shape and cutting qualities. These goods are sold only to one merchant in a place and not to jobbers, thus protecting customers.

THE PRINDLE MFG. COMPANY, Aurora, Ill.: Overhead Hangers for Sliding Doors. Prices and illustrations are given in their catalogue of the Prindle, Prindle Long Run and Annex Hangers, also illustration of the Chase Overhead Adjustable Stop. The Prindle and Annex Hangers are supplied with this stop, which it is claimed takes the place of eight pieces to accomplish the same purpose as used in the old way. The point is made that it strengthens an otherwise unavoidable weak location in construction and prevents the spreading or closing together of the rails.

STANDARD CYCLE COMPANY, Buffalo, N. Y., importers and wholesale dealers in Bicycle, Cycle Sundries and Typewriters: Illustrations are given of the Wheels which they are offering, together with sundries, and of the Odell Typewriter.

THE WHITMAN & BARNES MFG. COMPANY, Chicago: Mower Knives, Reaper Sickles, Mower Sections, Mower Guards, Spring Keys and Cotters, Thrashing Machine Teeth, Sulky Rake Teeth, Machine Repairs, Plow Repairs, Binder Twines, Binder Covers and other Agricultural Implement Supplies. They state that a large stock of these goods are always on

hand, which allows them to make prompt shipment. Their catalogue of 100 pages contains illustrations and price-lists of these goods.

B. A. STEVENS, Toledo, Ohio: Refrigerators and Ice Boxes, Single and Double Door House Refrigerators, Single and Double Lid Ice Boxes, Open Pan Coolers and Refrigerators, Grocers' Refrigerators and Ice Boxes, Stevens' Fish Boxes, Kitchen Safes, &c.

I. E. PALMER, Middletown, Conn.: Cotton Tissues, Hammocks, Crinoline Linings, Mosquito Netting, Window-Screen Cloth. Sheer and Swiss Finishing a specialty. Palmer's Patent Hammocks are described as made from 28 inches to 60 inches in width, with and without valance, in various colors, with and without pillows. The Valance Hammocks are referred to as having merits besides those of grace and beauty, as the valance serves to screen the body, or may be used as a covering.

E. T. BARNUM, Detroit, Mich.: Reservoir Vases, &c. The Vases are shown in a large variety of designs and sizes. They are arranged with a tube connecting the earth receiver with the reservoir. This tube is packed with moss or sponge through which the moisture is designed to be drawn up into the earth by capillary attraction. It is claimed that the reservoirs do not need filling with water oftener than once in ten or 15 days, and that as the moisture is drawn upward by capillary attraction the ground does not become caked and hard.

THE STAR HEEL PLATE COMPANY, Sacks & Richmond, Proprietors, Newark, N. J.: Sole and Heel Plates on cards, Shine Boxes, Foot Rests, Heel Stiffeners, Star Lasts, Awl Hafts, Bug Boot Jacks, Shoe Hammers, Hammer Handles, Malleable Hob Nails, &c., also Gem Workman's Friend. This consists of a box with Iron Last, Hammer, Leather Knife, Brad Awl, Box Shoe Nails, 54 Sole and Heel Plates.

Marketing Cycles.

WE GIVE, as of interest to the trade, some information in regard to the plans pursued by some of the representative manufacturers and jobbers of Cycles in marketing their wheels.

WILLIAM READ & SONS, Boston, referring to the fact that the general system in use in the Bicycle trade is to establish agencies, and that the Hardware trade as a whole are taking up these goods as a part of their business, in describing their own methods say:

Where a firm orders from us we give them sole agency in their place and protect them fully in their territory. This is the system we think most commonly adopted by all manufacturers rather than sell outright in the open market. Such also keeps up the interest better, as a Hardware firm can confidently offer the goods, knowing that they will be fully protected. We have many of the best Hardware firms throughout the country as our agents, and they are selling our goods very largely.

WARWICK CYCLE MFG. COMPANY, Springfield, Mass., advise us that some of their best agents are in the Hardware line. The company have sold goods wholly through agencies, dealers taking, for instance, the agency for their city or town, and the company guarantee to them the exclusive handling of their wheels for that territory. On this point they state:

The greater portion of our output has in the past, and is now, being sold through general agents. For instance, we place the agency for the larger part of New Eng-

land with a responsible Boston party, who in turn appoint their own agents and look after the details. As a rule, a man going into the business wants to have at least a sample of each wheel he is to represent, and it is better if he can afford to carry duplicates.

Hardware dealers have in many cases contracted with the general agents of the company to handle the goods this year, and it is the company's opinion that another year will see the Hardware trade engaging in the business still more deeply. Bicycles are referred to as a line of goods that the Hardware trade can very easily carry with their other goods, and the point is made that the sale of the wheel brings with it a demand for small Hardware, in the way of Wrenches, Screw Drivers, Oil Cans, Bicycle Stands, Lanterns, Cleaning Tools, &c., which is worthy of the merchant's attention.

GORMULLY & JEFFERY MFG. CO., Chicago, state that, in common with other makers of high-grade Bicycles, they have no jobbing trade, and confine the sale of wheels to agents. Bicycle Lamps and sundries, of which they are extensive manufacturers, they, however, reserve the right to sell and job to all applicants. The most specific stipulation of the contracts executed with their agents is that list prices must be maintained under all circumstances. The suggestion is made that the assortment of wheels to be ordered by a Hardware merchant when first engaging in this line should depend much on the size of and interest displayed in his town. In small communities it is thought a dealer could well get along with a convertible wheel, being adapted for either ladies' or gentlemen's use. In regard to the retailing of Bicycles, the company write as follows:

Some few agents contrive to work along without even a sample wheel, but they are becoming fewer and fewer each year, as the demands of trade are gradually making a sample necessary. It is a noteworthy fact, however, that in almost every case Cycle agents are either riders themselves or else have some one else in their employ who is, which, in itself, goes a long way. Among our very best agents are numbered very many who are engaged in the Hardware trade. Hardwaremen in cities the size of Pittsburgh, and even larger, have found the sale of Cycles a safe, profitable and convenient addition to their business. It is a line, however, that must be pushed and looked after, as it will not brook neglect nor take care of itself, and any one who contemplates engaging therein should take this as a law unto himself.

The same firm allude to vibration as the greatest evil of the Safety Bicycle, and claim that they were the first to recognize it and to introduce the spring frame type of safety.

MERWIN, HULBERT & Co., 26 West Twenty-third street, New York, advise us that they sell machines outright, placing no agencies except on the Swift machine, which they control for New York State only. Regarding the assortment of wheels to be ordered by a retail Hardware house, they say:

The assortment varies largely according to the size of the place and how exten-

sively the merchant is desirous of entering the wheel business. To cover the line fully and have a correct representation it would be necessary to put in stock a wheel of each style and size. Of course a great many of the Hardwaremen do not care to enter so extensively into the wheel business as to put in a line of 13 or 14 wheels.

Merwin, Hulbert & Co. also mention that the Cushion Tire is being called for this season in preference to the Solid Tire.

KENWOOD MFG. COMPANY, Chicago, state that it has not been their practice to market their goods through the Hardware trade as a rule, the principal reason being that they manufacture but one grade of machines. They explain that low and medium priced goods are handled through the larger jobbing houses, and through this instrumentality the goods come into the hands of the retail trade.

POPE MFG. COMPANY, Boston, advise us that their goods are marketed in a very different way from most of those carried by the Hardware trade, as they sell only through their regularly appointed agents. They sell their wheels to their agents at fixed discounts, who are bound by agreement with the manufacturers to sell them strictly at list prices. The agents are protected, one only being appointed in each place, and are not allowed to interfere with each other. This company add:

Under these circumstances it has been difficult for us in years past to sell our machines as frequently as we wished through Hardware houses. Within the past year or two, however, they have begun to realize more and more the value of our agency, and we are continually appointing more Hardware houses of good standing.

OVERMAN WHEEL COMPANY, Chicopee Falls, Mass., have their goods handled by agents appointed in the various cities, and no discount is given except to these agents. Regarding their experience in this direction they say:

Our experience is that the Hardware trade is taking up Bicycle dealing very generally. The business is drifting that way. Some of our best agents are Hardware dealers, men who took up the line very reluctantly two or three years ago, and are now making it a leading line.

STOVER BICYCLE MFG. COMPANY, Freeport, Ill., advise us that their business is done entirely through appointed agencies. They appoint but one agent in a city as a rule. Their general agent in each of the various States appoints a subordinate agent. The company thus refer further to the matter:

Our wheels are of the highest possible grade and are sold at the highest possible price. None of our agents are allowed to sell a Bicycle of our own make at less than catalogue prices. We sell our Bicycles outright to the original dealer, allowing him, of course, a good discount for his work.

AQUILA B. RICH & Co., New York, sell the Ormonde Cycles outright. They state that although a man may advertise himself as agent, he is not an agent in the strict sense, as the goods are sold on 30 or 60 days' time, according to agreement with customers for the amount of goods shipped.

STERLING ELLIOTT, Newton, Mass., advises us that he has not done anything in the way of placing Bicycles with the Hardware trade. He found it more satisfactory to sell through special agents.

GEO. N. PIERCE & Co., Buffalo, N. Y., pursue the policy of selling their goods direct to the trade, and give the exclusive sale to one party in a city. They find less competition and cutting among the trade as the result of this plan. They express the opinion that the Hardwaremen throughout the country are the proper men to sell these goods, although in large cities the trade is of such importance that some houses make a specialty of this class of goods.

HORTON, GILMORE, MCWILLIAMS & Co., Chicago, appoint agents wherever they can secure reliable firms to act in that capacity. They then throw all business originating in that immediate vicinity into the hands of these agents. The agents are allowed commissions which, it is stated, afford satisfactory profits. The firm do not consign any machines, but sell them outright. They do not send on trial, but are willing to take back any machine not sold in 30 days after delivery, if the purchaser pays all charges, and the machine is found in good condition. With them a guarantee does not mean to replace the machine with another one, but to replace any part that may be defective. They advise us that it has been necessary for them to make very strict regulations with agents or other purchasers.

HIBBARD, SPENCER, BARTLETT & Co., Chicago, sell their Wheels through the Hardware trade; and have found it easy to incorporate Cycles with Hardware and general stocks. This firm find the tendency to be toward the Hardware trade taking hold and making a specialty of such goods, and that the indications now are, with the season not yet fully opened, that 1891 will be the best season yet for this line of goods. This view of the outlook is supported by the large sales they have already made of their wheels, which is spoken of as simply phenomenal.

Exports.

PER SHIP GENISTA, APRIL 29, 1891, FOR SYDNEY, N. S. W.

By W. K. Freeman.—2 casks Tackle Blocks.
By Bradley & Hubbard Mfg. Co.—23 casks Lamp Goods.
By Simpson, Hall, Miller & Co.—8 casks and 5 packages Plated Ware.
By E. W. Harrison.—2 boxes Chucks.
By L. D. Crossmond & Co.—7 cases Agricultural Implements.
By A. Field & Sons.—20 boxes Iron Nails.
By Healy & Earl.—4 cases Saws, 3 boxes Hardware, 3 boxes Iron Pumps, 3 boxes Emery Machinery and Wheels, 2 boxes Scales, 1 box Blowers, 1 box Drills.
By Woodhouse & Stortz.—27 packages Hardware, 1 case Lead Pencils, 6 cases Stove Polish.
By Maillet & Quereau.—15 cases Axes.
By Coombs, Crosby & Eddy.—30 dozen Pick Handles, 8 Churns, 1 dozen Fiber Ware, 2 dozen Plated Ware, 3 dozen Axes.
By Hartley & Graham.—162,000 Cartridges, 60,000 Empty Shells, 28,250 Empty Shells, &c., 16 dozen sets Tools, 190 Revolvers, 1 case Tools and Fire Arms, 30 Rifles, 1 case Fire Arms, 27,040 Metallic Cartridges, 10,600 Empty Shells, &c.
By Strong & Trowbridge.—2 dozen Lamp-ware, 30 Plated Ware.
By Itley, Doubleday & Co.—1 case and 1 box Hardware, 18 dozen Brushes, 1 case Hardware, 1 case Brushes.

By W. H. Crossman & Bro.—20 boxes Hardware, 10 dozen Axes, 16 dozen Bells, 6 dozen Lanterns, 33 dozen Axes, $\frac{1}{2}$ dozen Wringers, 3 dozen Saw Sets, 5 dozen Clamps, 60 dozen Fish Lines, 50,000 BB Caps, 14,000 Cartridges, 2 pieces Plated Ware, 224 pounds Stone, 3 dozen Scales, 1 dozen Lawn Mowers, 1 Refrigerator, 3 cases Hardware, $\frac{1}{2}$ dozen Wringers, 3 dozen Carpet Sweepers, 84 dozen Metal Polish, 2 gross Egg Beaters, 1000 pounds Iron Nails.

By Henry W. Peabody & Co.—103 packages Hardware, 2 cases Lampware, 2 packages Pumps, 4 crates Fly Traps, 4 racks Churns, 3 crates Boring Machines, 2337 pounds Bolts, 4 cases Paper Shells, 10,000 Cartridges, 1 case Reloading Tools, 950 pounds Nails, 1 case Hardware, 1 case Sandpaper, 14 cases Hardware, 48 cases Axes, 40 cases Cartridges, 20 cases Nails, 5 cases Edge Tools, 2 cases Lawn Mowers, 2 cases Bolts, 1 case Wire Goods, 1 case Stepladders, 3 dozen Wringers, 3 cases Tools, 6 cases Nails, 5 packages Plows, 3 cases Hardware.

By R. W. Forbes & Son.—4 dozen Braces, 6 sets Axes.

By Arnold, Cheney & Co.—1 case Hardware.

By the F. B. Wheeler Company.—1 case Hammers, 5 cases Axes, 1 case Hammers, 1 case Plated Ware, 1 case Tinware, 1 case Hardware, 1 case Tinware.

By F. & J. Meyer.— $1\frac{1}{2}$ dozen Lamps, 1 case Ice-Cream Freezers, 1 case Axe Handles, 1 case Sad Irons.

By R. W. Cameron & Co.—9 cases Wringers, 6 dozen Lamp Goods, 11 packages Emery Wheels, 1 package Oilers, 3 cases Sandpaper, 4 crates Pulleys, 1 box Bushings.

By McLean Bros. & Rigg.—439 packages Harvesting Machinery, 14 dozen Axle Clips, $\frac{1}{2}$ dozen Wringers, 1 Mangle, 2240 pounds Barb Wire, $1\frac{1}{2}$ dozen Plated Casters, 15 dozen Braces, 35 dozen Axes and Picks, 5 dozen sets Sad Irons, 24 dozen Cow Bells, 2 dozen Stones, 36 dozen Rakes, 21 dozen Hoes, $\frac{1}{2}$ dozen Planters, &c., 50,000 Metallic Cartridges, 897 pounds Tack, 6 Scroll Saws, &c., 23 dozen Cow Bells, &c., $11\frac{1}{2}$ dozen Wringers, 42 dozen Picks, 2 dozen Planes, 4 dozen Lanterns, 20 dozen Hay Rakes, 20 dozen Axes, 44 dozen Axes and Hatchets, 10 dozen Drills, $\frac{1}{2}$ dozen Axes, 1 dozen Air Guns, 15 dozen Bird Cages.

By W. H. Crossman & Bro.—18 dozen Corn Mills, 4 cases Hoes and cultivators, 18 Hoes, 21 Freezers, 6 Vises, 7 packages Plated Ware, 1000 yards Wire Cloth.

PER BARK ANTIONETTE, MAY 1, 1891, FOR ADELAIDE, AUSTRALIA.

By Meriden Britannia Company.—4 packages Plated Ware.

By Winchester Repeating Arms Company.—30 Guns, 50,000 Metallic Cartridges.

By W. A. Wood.—20 Mowers, 5 Reapers, 13 Hay Rakes, 10 Reapers.

By R. W. Forbes & Son.—14 Lawn Mowers.

By Combs, Crosby & Eddy.—5 cases Fire Arms, 8000 Cartridges, 1 case Fire Arms, 40,000 Cartridges, 21,000 Empty Shells, 19 Fire Arms.

By W. H. Crossman & Co.—16 cases Agricultural Implements, 1 case Hardware, 5 cases Agricultural Implements, 6 cases Hardware, 25,000 Cartridge Shells, 3 dozen Wringers.

By McLean Bros. & Rigg.— $1\frac{1}{2}$ dozen Stocks and Dies, 1 dozen Air Guns, $\frac{1}{2}$ dozen Wringers, 10 reams Sandpaper, 6 dozen Hay Forks, 1 dozen Corn Planters, &c., 90 packages Harvesting Machinery, 22 gross Lead Pencils, 1 Mangle, $\frac{1}{2}$ dozen Axes, 2 dozen Cork Pullers, 1000 Metallic Cartridges, 66 pairs Spring Butts.

By Arkell & Douglas.—16,000 pounds Axes, 10,100 pounds Forks, 4 Tire Upsetters, 12 dozen Iron Brackets, 9 cases Bolts, 9 dozen Wrenches, 1500 pounds Nails, 10 gross Snaps.

By Mailer & Quereau.—5 cases Axes, 30 cases and 264 packages Agricultural Implements, 26 packages Lampware.

By H. W. Peabody & Co.—5 cases Axes, 2 cases Forks, 8 cases Hardware, 1 crate Refrigerator, $12\frac{1}{2}$ tons Barb Wire, 2 cases Hardware, 5 dozen Wringers, 35 dozen Forks, 10 packages Hardware, 1 case Oil Stoves, 2 cases Plated Ware, 1 case Barometers, 1 case Traps, 1 case Cutlery, 1 case Egg Beaters, 30 packages Hardware, 1 case Agate Ware, 20 crates Stoves, $4\frac{1}{2}$ dozen Wringers, 1 case Stamped Ware, 25 dozen Lampware, 8 dozen Tools, 1 case Pumps, 2 cases Hardware, 1 package and 1 case Saws, 13 cases Hardware.

Paints and Colors.

The general movement in this line appears to be satisfactory to both manufacturers and jobbers, and importers make no complaint as to trade in foreign goods. In no quarter is any claim made of unusual activity, nor is there the least evidence of

tendency to carry operations beyond limits not justified by the volume of current distribution. In other words, conservative action is the rule all along the line. It would appear, however, that the distribution of specialties, such as prepared paints, from the class that may be termed household varieties up to the finest descriptions used for coach painting and similar work, compares very favorably with the average for this season of the year. With house painters' staples, &c., the experience is quite as good, so that altogether a market is afforded grinders' colors and various base materials broad enough to keep values steady to firm. In point of fact no disturbing feature is visible in any of the several departments, and competition, while not lifeless, is remarkably temperate. Thus far the spring season has been satisfactory, and the outlook is considered favorable for relatively as good results up to midsummer.

White Lead.—No change whatever is visible. The demand for corrodors' product is steady and of good volume. The movement of mixed Leads is also represented as being liberal, and, while competition between the several varieties is somewhat sharp at intervals, it does not reach the point where values are seriously disturbed. Jobbers still handle pure Lead as their interests may best be served, frequently giving customers better terms than those obtained from the corrodors direct, but the official list is not departed from by the corrodors. On mixed Leads there is some little irregularity, yet nothing that would contrast a great deal with what has been common all through the season.

Zincs.—To all accounts the entire output of American Oxide is closely taken up between filling old contracts and meeting orders that come in from day to day. Some manufacturers, as a matter of fact, find it necessary to seek assistance from their neighbors, and, under existing arrangements between the various producers, such aid is rendered with little ceremony. Despite the strong position of the market, no change is made in prices, but it is intimated in some quarters that a higher level of prices is likely to be established ere long. Arrivals of foreign Zincs are free, but not excessive, and prices for all brands remain firm.

Colors.—In the general line of Dry Colors adapted to house painters' and grinders' wants there is still a fairly liberal business, and prices all along the line are quite steady. Goods that do not reach a high standard in quality are some exception to the rule, as usual, but even in the instance of those varieties there is nothing more than the ordinary variation. Oil Colors are moving off in a fairly satisfactory manner and the distribution of Ready-Mixed Paints seems to be quite as full as at any previous time since the opening of the spring season. It is intimated in some quarters that prices for Quicksilver Vermilion are likely to be advanced ere long, owing to the enhanced cost of Quicksilver, but, as yet, manufacturers are taking orders for both prompt and future delivery at old card rates without ceremony. Outside manufacturers of Paris Green are still shading the association prices $\frac{1}{4}$ ¢ $\frac{1}{2}$ ¢ lb, and orders for the insecticide are coming along rather slowly, so that altogether the market presents a dull appearance.

Miscellaneous.—The market for Block Chalk is unchanged. Current arrivals go direct to buyers on old purchases, for the most part, and no important new contracts for future shipments appear to be making. In Whiting there is a very good trade. Common quality is freely offered and sells at somewhat irregular prices, but fine grades are closely sold up and bring full rates. Paris White finds about the usual

sale at steady prices. In the movement of Barytes, Terra Alba, China Clay and Talc nothing outside of the ordinary routine is noted, and prices are without change. Local manufacturers report a fair sale for Putty, and make no change in their prices, but as low as 1.45¢ for tins is said to have been accepted in the Philadelphia market.

Oils and Turpentine.

The market for Animal and Vegetable Oils has been rather quiet throughout the week. Doubtless fully the average quantity of the leading varieties has moved from first hands into the channels of consumption and final distribution, but not the slightest sign of departure from extremely conservative buying has been manifested in any department, and changes in prices are few as well as unimportant. In a general way the present situation can fairly be said to be an exact counterpart of that of a week ago. There is nothing in the relation of supply and demand that would enable buyers or sellers to claim any decided advantage, or that would point to radical changes in the immediate future.

Linseed Oil.—At a meeting of crushers on the 7th inst. former prices were reaffirmed for the product of local mills and for other brands for delivery at this point and immediate vicinity. The various interests would thus appear to maintain friendly relations, and the indications are the compact is a strong one. The demand for Oil is running very steady, with the aggregate movement fully up to the average for this season of the year and the product of local crushers closely sold up.

Cotton Seed Oil.—Receipts from the primary sources of supply have been somewhat heavier, and it is stated that financial conditions have caused more or less Oil to be sent forward. This fact of itself has tended to weaken prices somewhat and indifference manifested by buyers also serves to affect the market. However, it does not appear that sellers have modified their figures to the extent of more than 1¢ @ $1\frac{1}{4}$ ¢ $\frac{1}{2}$ gallon, and the concession is chiefly on the inferior grades. The demand from both export and home trade buyers is momentarily rather light.

Lard Oil.—In this line business has been of larger volume. Several round lots were placed during the early part of the week, and the demand is still moderately active. Prices show slight irregularity, being governed more or less by the movement in the market for raw material, yet are without radical change here or at other points.

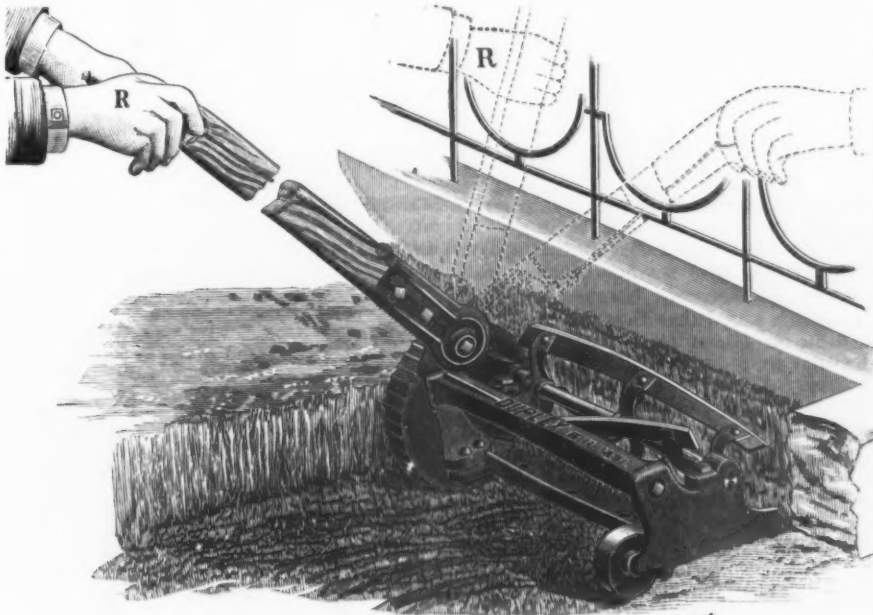
Fish Oils.—The position of the market for Crude Sperm Oil remains strong and prices for the manufactured products are very firm, although nothing more than a routine business passes. A sale has been made of about 100 barrels of Crude Whale Oil at 50¢ $\frac{1}{2}$ gallon, which was the only lot in first hands in this country. An advance of 1¢ is quoted in prices for the manufactured Oils; the supply is very light. Nothing new has transpired in the market for Menhaden Oils and buyers are extremely indifferent, in view of the near approach of the fishing season.

Miscellaneous.—Olive Oil is a shade weaker. Spot lots may be secured at 72¢ and parcels to arrive are offered at 70¢. The market for Coconut Oil has undergone no change. Palm Oil is firm at former prices, but moving slowly.

Spirits Turpentine.—The distribution at this point has been sufficient to prevent any considerable addition to the surplus stock in first hands, and in the absence of any radical change at the primary sources of supply, prices have been firmer. Late transactions were at 39 $\frac{1}{4}$ ¢ for regular, 39 $\frac{1}{4}$ ¢ for Old Dominion and 39 $\frac{1}{4}$ ¢ for machine barrels.

Duplex Mower and Trimmer.

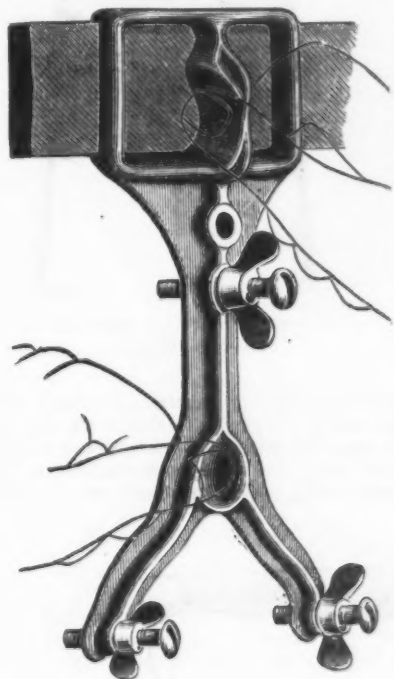
Dille & Anderson, Richmond, Ind., are introducing a mower and trimmer combined, as illustrated in the accompanying cut. It is designed for cutting small lawns and then trimming the edges up clean. It is claimed that the grass can be

*Duplex Mower and Trimmer.*

trimmed in a right-angle corner by throwing the handle over in front of the cutter, as indicated by the dotted lines in the cut, then cutting the length of the handle, after which the handle is reversed back.

Canton Side File.

Canton Saw Company, Canton, Ohio, are introducing a side file, as illustrated herewith. It is designed for use by mill

*Canton Side File.*

men to regulate saw teeth after they have been swaged or set. It is also intended for gauging the width of inserted teeth, which are referred to as requiring side filing to insure clean work. It is claimed

that with the use of this side file the teeth of a saw will run longer and do much better and cleaner work.

The Noyes Rotary Punch.

Barber, Noyes & Co., Ashtabula, Ohio, are putting on the market Noyes' Rotary

Punch, a general view of which is shown in the accompanying illustration. This tool is intended especially for tanners, sheet metal workers and boiler makers, and the manufacturers claim many advantages for it. The power, as shown in the cut, is obtained by a screw, which is said to pos-

*The Noyes Rotary Punch.*

sess many advantages as compared with the lever form of punch. The screw, punch and die are described as being made of the best tool steel and finished to standard gauges and carefully tempered. It is pointed out that the rotary punch rims the hole and cuts it with an unbroken edge. The tool illustrated will punch $\frac{1}{4}$ -inch hole in No. 12 gauge iron or lighter, and $4\frac{1}{2}$ to 15 inches from the edge of the sheet to the center of the hole.

There are 1400 crippled freight cars belonging to the E. T., V. and G. Railroad side tracked at Knoxville, Tenn., and quite a number also at Atlanta. No effort is being made to repair them, owing to stagnation in business. Many other roads are pursuing the same policy.

Victor Wagon Jack.

The E. Covert Mfg. Company, Farmer Village, N. Y., are putting on the market a wagon jack, as illustrated herewith. This is an all-iron wagon jack, the principle of its construction being shown in the cut. The statement is made that it weighs 8 pounds and has a lifting capacity of 1600 pounds. The manufacturers refer to the simplicity of its design, its

*Victor Wagon Jack.*

neatness of appearance, light weight and lifting capacity as recommending it to both city and country trade.

The New Dover Egg Beater.

The Standard Company, 57 Haverhill street, Boston, Mass., have brought out a new form of the Dover Egg Beater that embodies features which are claimed to be

*New Dover Egg Beater.*

a decided improvement in its construction. The accompanying illustration shows the new form of the beater. From an inspection of the cut it will be seen that the change consists in the arms of the beater, which are made double and present a more efficient surface. The manufacturers state that for beating eggs or whipping cream this device is exceptionally powerful.

1890 Skew Back One Man Cross-Cut.

Henry Disston & Sons, Philadelphia, Pa., are offering the trade a new one-man cross-cut saw, as illustrated herewith. It

Mott's Indestructible Neck Yoke.

Samuel R. Mott, Jr., Rochester, N. Y., is offering the trade a neck yoke, as illustrated herewith. It is described as being

Improved Pan-American Washer.

The Vandergrift Mfg. Company, Jamestown, N. Y., are offering the trade an improved washer, as illustrated in Fig. 1. It



1890 Skew-Back.

is described as being made of the very best crucible cast steel, and patent tempered. The blade is ground in the same manner as their No. 7 hand saw, and has a carved walnut handle of improved pattern, with four brass screws. It is put on the market as a saw of exceptionally good quality.

Revolving Disk Fly Fan.

Wrenn, Whitehurst & Co., Norfolk, Va., are introducing a fly fan, as illustrated herewith. The arms turn by the action of the clock work in the base, and are so arranged as to remain at any desired angle. The disks revolve as their surface is thus presented to the air, much the same as a paper pin wheel. The fan is

made of the best quality hickory, grooved spirally from end to end, having about three grooves to the inch. In this groove a No. 14 steel wire is wound, under great tension, and securely fastened at either end. It is stated that thus it is made impossible for horses to gnaw, and that at the same time its strength is greatly increased. Attention is called to the fact that more yokes are destroyed by being gnawed than are worn out. The center iron is a heavy iron band, encircling the yoke and clamping its center, thereby avoiding the weakening of the yoke by having holes bored through it. The yokes are painted or finished in natural wood, as desired. The manufacturer states that specially constructed machinery is em-

is stated that it is supplied with all the latest improvements used on their Western washer, and in addition, the socket or

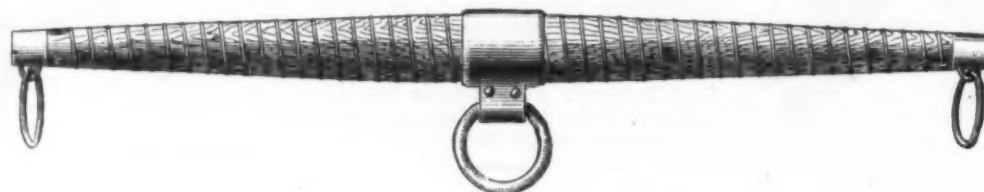


Revolving Disc Fly Fan.

made of brass and copper, except the disks, ornamented and nickel plated. The material used is referred to as all of the best, and one winding of the clock work as causing it to run about two hours and a half. The claims are made that the flies will

played in the manufacture of these goods, which enables perfect work to be turned out at a minimum cost.

Nearly all the stock of the newly-organized Taylor Mfg. Company, Chambers-



Mott's Indestructible Neck Yoke.

not ride on the fan; that the constantly revolving disks will frighten away flies, and also cause a pleasant circulation of air.

burg, Pa., has been subscribed, and it is likely that the works will soon be in operation again.

or blocks of any description on the inside of the machine. The washer is referred to as being constructed entirely of clear



Fig. 1.—Improved Pan-American Washer.

bracket that holds the leg is so arranged that the leg is self-adjusting, thereby al-

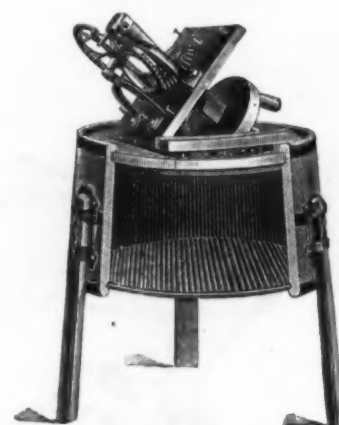


Fig. 2.—Interior View of Improved Pan-American Washer.

ways insuring the machine to stand firm and solid. As shown in Fig. 2, the interior is supplied with a full corrugated bottom and sides the same as a washboard, the point being made that there are no nails

pine, with extra heavy hoops which are guaranteed not to break; that it is large, substantial and nicely finished.

Star Tension Plate Shear.

The American Knife and Razor Company, St. Louis, Mo., are placing on the

it to work loose. The works are all in the iron box, which is held to the back plate by a center screw, so that after the plate is once fastened against the wall there is no need of its ever being taken down; to get at the works it is only necessary to remove the box, which is done by taking out the center screw. The manufacturers state that in making this bell they have aimed to use only the best

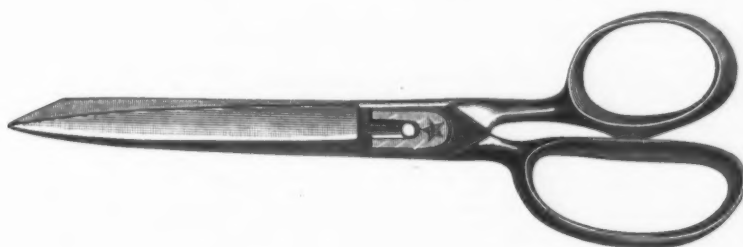


Fig. 1.—Star Tension Plate Shear.

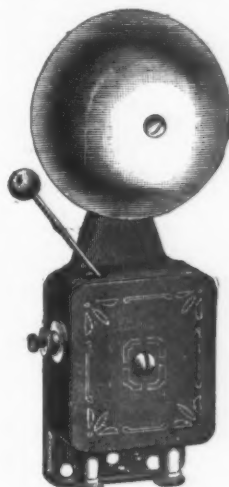
market a tension plate shear, as illustrated herewith. Fig. 1 represents the shear, and Fig. 2 the plate, bolt and screw in detail. The bolt holds the blades together, while the tension plate is placed over the head of the bolt and is held in position by a small screw, as shown in Fig. 3. The screw secures the tension desired by being either tightened or loosened, as required, and it is claimed



Fig. 2.—Bolt and Tension Plate.

that when once adjusted there is no possibility of its getting loose or out of order in any way. It is remarked that there is nothing to become loose except from wear, and this is so slight that it is hardly worth considering. The statement is made that both blades turn freely on the bolt, thus decreasing the friction and consequent wear to a marked degree, and that the small screw by which the tension is adjusted is not acted upon by any moving part, therefore it remains as

of material, and they consider it perfect in every respect. Each bell is packed, complete, in a pasteboard box, with di-



Iron Box Electric Bell.

rections for placing in position printed on the outside of the box.

The Belding Motor and Mfg. Company, at Chicago, made an assignment on Mon-

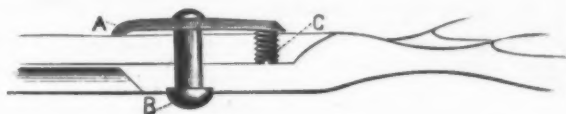


Fig. 3.—Application of Bolt and Tension Plate to Shear.

placed, with the blades held firmly together without strain.

Iron Box Electric Bell.

W. R. Ostrander & Co., 195 and 197 Fulton street, New York, are introducing an iron box electric bell, as illustrated herewith. The armature has bottom and side adjustment, and it is stated that it is pivoted in a such a manner that, although it works very freely, it is impossible for the points to get out of contact. It can be adjusted to ring on one cell of battery. The contact points are made of platinum wire, riveted in; the armature spring is phosphor bronze. The hammer rod is twisted in the armature in such a manner that it is claimed that it is impossible for

day. The liabilities are about \$175,000, of which \$100,000 is for borrowed money. The assets are not scheduled, but are not thought to exceed the liabilities.

Lake and Rail Rates.—The Joint Committee of the Trunk Lines on Saturday concluded its deliberations upon the Canadian Pacific Railway's claim for differentials. It was decided to recommend that the all-rail rates established at the meeting held on March 18 and 19 last should obtain until the Board of Presidents issue their ultimatum. The all-rail rates are as follows: For 100 pounds freight, first-class, \$1.30 via Chicago; \$1.20 via National Dispatch and Chicago; \$1.20 via Ontario and Western and Canadian Pacific; \$1.01 by Duluth and Lake Superior, and \$1.11 lake and rail via Chicago.

The question of lake and rail rates was not discussed. The decision is perfectly acceptable to the Canadian Pacific. Their rate of \$1.07 will continue in effect until May 14. Then the above rates will obtain until the Board of Presidents make a final decision. Secretary Hoyt of the Trunk Line Association said it was probable that the Board of Presidents would meet next week.

No ore will be shipped from Cleveland until the handlers accept a reduction, and vessel owners say this will involve no hardship, as the Lake Superior mines are greatly reducing their output.

Stephen Salisbury of Worcester, Mass., has offered to contribute \$10,000 toward a fund of \$100,000 for the establishment of a manual training school at the Worcester Polytechnic Institute.

CONTENTS.

The Woodbury Automatic High-Speed Engine. Illustrated.....	913
Grant Locomotive Buildings.....	919
New Publications.....	919
The Davies Tin Plate Cleaning Machine. II.	920
The Bates Machine Works.....	920
The Tinned Plate Manufacturers' Association	921
The Ericsson Monument Committee.....	921
University of Pennsylvania.....	922
End of the San Francisco Strike.....	922
Haulage of Canal Boats by Locomotives.....	922
Double Headed Rotary Shear. Illustrated..	923
New Ocean Greyhound.....	923
High Pressure Steam Boilers.....	923
Washington News.....	924
A Compound Surface Condensing Beam Engine.....	924
The Russian Iron and Steel Industry.....	924
Boiler Tube Tests. Illustrated.....	925
A New Storage Battery.....	925
The Westinghouse Electric and Mfg. Company.....	926
The Buffalo "66" Drill. Illustrated.....	927
Imports of Mexico.....	927
The Week.....	928
Editorials:	
Effects of the Connellsville Coke Strike.	929
Labor and Law.....	929
Selling Prices and Quotations of Steel Rails.....	930
The Chart of Tin and Tin-Plate Prices...	931
The Ensley Steel Plant.....	931
Pig Production Stationary.....	931
Correspondence	932
Condition of the Stove Trade.....	933
Ordnance and Projectiles for Coast Defence.	933
New Lines of Elevated Railroad.....	933
Manufacturing: Iron and Steel, Machinery, Hardware, Miscellaneous.....	934-935
Imports of Tin Plates.....	935
Trade Report: Pittsburgh, Cincinnati, Philadelphia, Chicago, Louisville, St. Louis, Cleveland, Detroit, Financial, New York, Metal Market, New York Metal Exchange, Coal Market, British Iron and Metal Markets.....	936-941
Hardware: Condition of Trade, Notes on Prices, The Atlas Tack Corporation, Electrical Goods to Carry in Stock, Export Notes, Trade Items, Hardware and Stove Dealers' Association, R. H. Dana & Co., South Dakota, It Is Reported—, Price-Lists, Circulars, &c., Marketing Cycles, Exports, Paints and Colors.....	942-948
Duplex Mower and Trimmer. Illustrated...	949
Canton Side File. Illustrated	949
The Noyes Rotary Punch. Illustrated. . .	949
Victor Wagon Jack. Illustrated.	949
The New Dover Egg Beater. Illustrated.....	949
1890 Skew-Back One Man Cross-Cut. Illus..	950
Revolving Disk Fly Pan. Illustrated	950
Mott's Indestructible Neck Yoke. Illus.....	950
Improved Pan-American Washer. Illus....	950
Star Tension Plate Shear. Illustrated.....	951
Iron Box Electric Bell. Illustrated	951
Lake and Rail Rates	951
Current Hardware Prices.....	952-957
Current Metal Prices	959

CURRENT HARDWARE PRICES.

MAY 13, 1891.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers' name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers, at the figures named.

Adjusters, Blind.

Domestic..... \$ dos \$3.00, 35¢
Excellior..... \$ dos \$10.00, 50¢10¢25¢
Washburn's Self-Locking..... 20¢20¢10¢

Ammunition.—

Caps, Percussion, 1000—
Eliks & Goldmark's and Union Metallic Cartridge Co.
F. L. Waterproof, 1-10's..... 34¢35¢
E. B. Trimmed Edge, 1-10's..... 40¢45¢
E. B. Grnd. Edge, Cent. Fire, 1-10's..... 40¢47¢
Musket Waterproof, 1-10's..... 50¢
G. D..... 28¢
S. B. Genuine Imported..... 45¢
Eley's E. B..... 54¢ @ 57¢
Eley's D Waterproof, Central Fire..... \$1.00

Cartridges—

Rim Fire Cartridges..... 50¢55¢2¢
Rim Fire Military..... 15¢2¢
Cent. Fire, Pistol and Rifle..... 25¢52¢
Cent. Fire, Military and Sporting..... 15¢52¢

Blank Cartridges, except 22 and 32 cal., additional 10% on above discounts.
Blank Cartridges, 22 cal., \$1.75..... 2¢
Blank Cartridges, 32 cal., \$3.50..... 2¢
Primed Shells and Bullets..... 15¢52¢
B. B. Caps, Round Ball, \$1.75..... 2¢
B. B. Caps, Con. Ball, Swgd., \$2.00..... 2¢

Primers—

Berdan Primers, \$1.00..... 2¢
B. L. Caps (for Sturtevant Shells) \$1.00..... 2¢
All other Primers, \$1.20..... 2¢

Shells—

First quality 4, 8, 10 and 12 gauge..... 25¢10¢2¢
First quality, 14, 16 and 20 gauge (\$10 list)..... 30¢10¢2¢
Prise..... 40¢2¢
Star, Club, Rival and Climax brands..... 35¢10¢2¢
Seibold's Comb. Shot Shells..... 15¢2¢
Brass Shot Shells, 1st quality..... 60¢2¢
Brass Shot Shells, Club, Rival, Climax..... 65¢2¢

Shells Loaded—

Standard List, July 10, 1890..... 40¢10¢
Wade—Price per M.
U. M. C. & W. R. A.—B. E., 11 up..... 68¢
U. M. C. & W. R. A.—B. E., 9&10..... 82¢
U. M. C. & W. R. A.—B. E., 8..... 96¢
U. M. C. & W. R. A.—B. E., 7..... 91¢
U. M. C. & W. R. A.—P. E., 11 up..... 1.15
U. M. C. & W. R. A.—P. E., 9&10..... 1.50
U. M. C. & W. R. A.—P. E., 8..... 1.70
U. M. C. & W. R. A.—P. E., 7..... 1.80
Eley's B. E., 11 up..... 1.75
Eley's P. E., 11 up..... 2.50

Anvils—

Eagle Anvils, 10¢..... 15¢15¢5¢
Peter Wright's..... 11¢11¢1¢
Armstrong's Mouse Hole..... 10¢11¢
Armstrong's Mouse Hole, Extra..... 12¢12¢4¢
Trenton..... 10¢10¢1¢
Wilkinson's..... 10¢10¢1¢
Moore & Barnes Mfg. Co..... 33¢2¢

Anvil Vise and Drill—

Millers Falls Co., \$18.00..... 20¢
Cheney Anvil and Vise..... 25¢
Allen Anvil and Vise, \$3.00..... 45¢2¢
Star..... 45¢2¢

Apple Parers—See Parers, Apple, &c.

Augers and Bits—

Douglas Mfg. Co..... 70¢10¢
Wm. A. Ives & Co..... 70¢10¢
Humphreysville Mfg. Co..... 70¢10¢
French, Swift & Co. (F. H. Beecher)..... 70¢10¢
P. S. & W. Co..... 70¢10¢
Rockford Bit Company..... 70¢10¢
Cook's, Douglas Mfg. Co..... 55¢
Cook's, N. H. Copper Co..... 50¢10¢10¢
Ives' Circular Lip..... 60¢
Patent Solid Head..... 30¢
C. E. Jennings & Co., No. 10, extension lip..... 40¢
C. E. Jennings & Co., No. 30..... 60¢
C. E. Jennings & Co., Auger Bits, 1/2 set, 32¢ quarters, No. 5, 35¢ No. 30, 35¢ 20¢
Lewis' Patent Single Twist..... 45¢
Russell Jennings' Augers and Bits..... 25¢10¢
Imitation Jennings' Bits..... 60¢60¢5¢
Snell's Jennings Pattern..... 60¢
Pugh's Black..... 20¢
Rockford, Jennings' Pattern..... 60¢
Car Bits..... 60¢60¢10¢
Car Bits, P. S. & W. Co..... 60¢10¢
Snell's Car Bits..... 60¢
L. Hommedieu Car Bits..... 15¢10¢
Forster's Pat. Auger Bits..... 20¢
Cincinnati Bell-Hangers' Bits..... 30¢10¢

Bit Stock Drills—

Morse Twist Drills..... 50¢10¢5¢
Standard..... 50¢10¢5¢
Cleveland..... 50¢10¢5¢
Syracuse, for metal..... 50¢10¢
Syracuse, for wood (wood list)..... 30¢30¢5¢
Williams' or Holt's, for metal..... 50¢10¢10¢
Williams' or Holt's, for wood..... 40¢10¢
Cincinnati, for wood..... 30¢10¢
Cincinnati, for metal..... 45¢10¢

Expansive Bits—

Clark's small, \$18; large, \$30..... 35¢35¢5¢
Ives' No. 4, 5 dos \$30..... 40¢
Swan's..... 40¢
Steer's No. 1, \$20; No. 2, \$22..... 35¢
Stearns' No. 2, \$45..... 30¢

Gimlet Bits—

Common..... \$ gross \$2.75 @ \$3.25
Diamond..... \$ dos \$1.10..... 25¢10¢
See..... 25¢25¢5¢
Double Cut, Shephardson's..... 45¢4¢10¢

Double Cut, Ct. Valley Mfg. Co..... 30¢10¢
Double Cut, Hartwell's, 5¢ gro..... 35¢25¢
Double Cut, Douglass..... 40¢10¢
Double Cut, Ives..... 60¢60¢10¢

Hollow Augers—

Ives..... 35¢4¢
French, Swift & Co..... 38¢4¢10¢
Douglass..... 40¢10¢
Booney's Adjustable, \$ dos \$48..... 40¢10¢
Stearns..... 30¢10¢
Ives' Expansive, each \$4.50..... 50¢5¢
Universal Expansive, each \$4.50..... 30¢
Wood's..... 35¢65¢10¢
Cincinnati Adjustable..... 25¢10¢
Cincinnati Standard..... 25¢10¢

Ship Augers and Bits—

L. Hommedieu's..... 15¢10¢15¢10¢5¢
Watrous..... 15¢10¢15¢10¢10¢
Snell's..... 15¢10¢15¢10¢5¢
Snell's Ship Auger Pat'n Car Bits, 15¢10¢15¢10¢5¢

Awl Hafts—See Hafts, Awl.

Awls, Brad Sets, &c—

Awls, Sewing, Common..... \$ gr \$1.70, 35¢
Awls, Should. Peg. \$ gr \$2.40, 40¢40¢10¢
Awls, Fat. Peg..... \$ gr 65¢..... 40¢40¢10¢
Awls, Shouldered Brad..... 2.70 \$ gr..... 35¢
Awls, Handled Brad..... \$7.50 \$ gr..... 45¢
Awls, Handled Scratch \$ gr, \$7.50, 35¢10¢
Awls, Socket Scratch, \$ dos, \$1.50, 25¢30¢

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

First quality, best brands, \$7.00 @ \$7.50
First qual., other brands..... 6.75 @
Second quality..... 6.00 6.5¢

Axle Grease—See Grease, Axle.

Axles—

No. 1, 4¢ @ 5¢, No. 2, 5¢ @ 6¢
Nos. 7 to 14..... 55¢2¢
Nos. 15 to 18..... 47¢
Nos. 19 to 22..... 70¢
Concord Axles, loose collar..... 5¢6¢
Concord Axles, solid collar..... 6¢7¢
National Tubular Self-Oiling..... 35¢4¢33¢45¢

Bag Holders.—See Holders, Bag.

Balances—

Spring Balances..... 40¢
No. 2000 20 30
Chatillon, \$ dos..... 80.80 0.95 1.75 net
Chatillon Straight Balances..... 40¢
Chatillon Circular Balances..... 60¢10¢

Bars—

Crow—
Cast Steel..... \$ 3 3/4¢
Iron, Steel Points..... \$ 3 3/4¢
Basins, Wash—
Standard Fiberglass, No. 1, 10 1/2-inch, \$3; 12-inch, \$2.25; 13 1/2-inch, \$2.75; 15-inch, \$3.25.

Beams, Scales—

Scale Beams, List Jan. 12, '82..... 50¢10¢
Chatillon's No. 1..... 40¢
Chatillon's No. 2..... 50¢
Custer's..... 33¢2¢

Benetars—

Dover..... \$ dos \$1.50
Duplex (Standard Co.)..... \$ dos \$1.25
Rival (Standard Co.)..... \$ dos \$1.00
Duplex Extra Heavy (Standard Co.)..... \$ dos \$3.50

Bryant's..... \$ gro \$14.00
Double (H. & R. Mfg. Co.), No. 0, \$12.00; No. 1, \$15.00; No. 2, \$38.00
Easy (H. & R. Mfg. Co.)..... \$ gro \$12.00
Triple (H. & R. Mfg. Co.)..... \$ gro \$16.50
Spiral..... \$ gro \$4.25 @ 4.50
Improved Acme (H. & R. Mfg. Co.)..... \$ gro \$9.00

Paine, Diehl & Co.'s..... \$ gro \$24.00
Silver & Co..... \$ dos \$6.50

Culinary—
Keystone, P. D. & C., Each, No. 1, \$1; No. 2, \$2..... 20¢

Bells—

Common Wrought..... 60¢10¢
Western..... 20¢10¢
Western, Sargent's list..... 70¢10¢
Kentucky, "Star"..... 20¢10¢
Kentucky, Sargent's list..... 70¢10¢
Dodge, Genuine Kentucky..... 70¢70¢10¢
Texas Star..... 50¢10¢60¢10¢5¢
Call, Brass..... 40¢40¢5¢
Farm Bells..... \$ 3 3/4¢ @ 3 1/2¢
Steel Alloy Church and School Bells..... 40¢

Door—

Gong, Abbe's..... 33¢4¢10¢
Gong, Yankee..... 45¢10¢
Gong, Barlow's..... 40¢12¢50¢
Crane, Taylor's..... 25¢10¢
Crane, Brooks'..... 60¢10¢2¢
Crane, Cone's..... 10¢
Crane, Connel's..... 20¢10¢
Lever, Sargent's..... 60¢10¢
Lever, Taylor's Bronzed or Plated..... net
Lever, Taylor's Japanned..... 25¢10¢
Lever, R. E. M. Co.'s..... 50¢10¢2¢
Pull, Brooks'..... 50¢10¢2¢
Pull, Western..... 25¢10¢

Electric—

Wollensak's..... 20¢
Bigelow & Dowse..... 20¢
Taylor's..... 20¢
Hand—
Light Brass..... 75¢10¢
Extra Heavy..... 65¢10¢
White Metal..... 50¢10¢10¢
Silver Chime..... 33¢10¢
Globe Cone's Patent..... 25¢10¢35¢

Bellows—

Blacksmiths..... 60¢5¢65¢
Molders..... 40¢40¢10¢
Hand Bellows..... 40¢10¢50¢

Belting, Rubber—

Common Standard..... 70¢70¢5¢
Standard..... 60¢10¢10¢70¢
Extra..... 50¢10¢60¢
N. Y. B. & P. Co., Carbon..... 60¢
N. Y. B. & P. Co., Diamond..... 60¢
N. Y. B. & P. Co., Para..... 50¢

Bench Stops—See Stops, Bench.

Benders, Upsetters, Tire—

Stoddard's Lightning Tire Upsetters..... 15¢
Detroit Perfected Tire Bender..... 15¢

Bits—

Auger, Gimlet, Bit Stock, Drills, &c., see Augers and Bits.

Bit Holders—See Holders, Bit.

Blind Adjusters—See Adjusters, Blind.

Blind Fasteners—See Fasteners, Blind.

Blind Staples—See Staples, Blind.

Blocks—

Ordinary Tackle, list May 20, 1889..... 60¢10¢10¢70¢
Cleveland Block Co., Mal. Iron..... 50¢
Moore's Novelty, Mal. Iron..... 50¢
Sure Grip Steel Tackle Blocks..... 25¢

Boards, Stove—

Wood Lined "Crystal"..... 50¢
"Embossed"..... 45¢
"Oxidized"..... 45¢
Paper Lined Zinc..... 55¢
"Crystal"..... 55¢
"Embossed"..... 55¢
"Oxidized"..... 45¢

Bolts—

Carriage, Machine, &c.—
Com. list June 10, '84..... 75¢10¢2¢
Genuine Eagle, list Oct. '84..... 75¢10¢80¢
Phila. pattern, list Oct. '84..... 80¢80¢10¢
R. B. & W., old list..... 70¢
Machine, list Jan. 1, 1890..... 75¢10¢75¢10¢5¢
Bolt Ends, list Jan. 1, 1890..... 75¢10¢75¢10¢5¢

Door and Shutter—

Cast Iron Barrel, Square, &c..... 70¢70¢10¢
Cast Iron Shutter Bolts..... 70¢70¢10¢
Cast Iron Chain (Sargent's list)..... 65¢10¢
Ives' Patent Door Bolts..... 60¢
Wrought Barrel..... 70¢70¢10¢
Wrought Square..... 70¢70¢10¢
Wrt Shutter, all Iron, Stanley's..... 60¢10¢
Wrt Shutter, Brass Knob..... 40¢10¢
Wrt Shutter, Sargent's list..... 60¢10¢
Wrt Sunk Flush, Sargent's list..... 55¢10¢
Wrt Sunk Flush, Stanley's list..... 50¢10¢
Wrt B.K. Flush, Com'n..... 55¢10¢

Stove and Plow—

Stove..... 60¢
Plow..... 60¢2¢
R. B. & W., Plow..... 55¢

Tire—

Common, list Feb. 28, '83..... 65¢
Port Chester Bolt and Nut Company:
Empire, list Feb. 28, '83..... 65¢
Keystone, Philadel., list Oct. '84..... 80¢
Norway, Phila., list Oct. '84..... 75¢
American Screw Company:
Norway, Phil., list Oct. '84..... 75¢
Eagle, Phil., list Oct. '84..... 80¢
Philadel., list Oct. '84..... 80¢
Bay State, list Feb. 28, '83..... 65¢
R. B. & W., Philadel., list Oct. '84..... 80¢

Borers, Tap—

Common and Kind..... 30¢10¢
Ives' Tap Borers..... 35¢45¢
Enterprise Mfg. Co..... 30¢10¢30¢
Clark's..... 35¢35¢5¢

Borax—

\$ 9¢ @ 10¢4¢

Boring Machines—See Machines, Boring.

Bow Pins—See Pins, Bow.

Boxes, Wagon—

Braces—

American Bit Brace Co.:
Nos. 10, 12, 20..... 60¢10¢
Nos. 11, 21, 24, 27..... 70¢10¢
Nos. 22, 23, 25..... 80¢10¢5¢
Nos. 26, 28, 30, 37..... 70¢10¢5¢
Ball Braces, net..... \$1.12 to \$1.25
Amidon's:
Barker's Imp'd Plain..... 75¢10¢80¢
Barker's Imp. Nickel..... 65¢10¢70¢
Ratchet..... 75¢10¢80¢
Eclipse Ratchet..... 60¢
Globe Jawed..... 40¢40¢10¢
Corner Brace..... 40¢40¢10¢
Buffalo Ball..... \$1.10 @ \$1.15

Barber's:
Nos. 10 to 16..... 50¢
Nos. 30 to 33..... 50¢
Nos. 40 to 68..... 50¢10¢

Barker's Imp. Polished..... 75¢10¢80¢
Barker's Imp. Nickel..... 65¢10¢70¢
Ratchet, Polished..... 60¢10¢60¢
Ratchet, Nickel..... 40¢40¢10¢
Buffalo Ball..... net, \$1.10 @ \$1.15

Bartholomew's:
Nos. 12, 27 and 30..... 50¢10¢60¢5¢
Nos. 117, 118, 119..... 70¢70¢3¢
Common Ball, American..... \$1.00 @ \$1.10
Fray's Genuine Spofford's..... 50¢5¢50¢10¢
Fray's No. 70 to 130, 81 to 123, 207 to 414..... 50¢10¢

Ives' New Haven Novelty..... 70¢70¢5¢
New Haven Ratchet..... 60¢5¢60¢10¢
Barber Ratchet..... 65¢60¢10¢
Barbers..... 60¢5¢
Spofford's..... 60¢5¢60¢10¢
Osgood's Ratchet..... 40¢10¢50¢
P. S. & W. Co., Peck's Patent..... 60¢

Brackets—

Shelf plain, Sargent list, 55¢10¢55¢
Shelf, fancy, Sargent's list, 60¢10¢60¢
Reading, plain..... 50¢10¢60¢10¢5¢
Reading, Rosette..... 60¢10¢60¢10¢10¢
Bright Wire Goods—See Wire.

Broilers—

Hens' Self-Inch..... 9 10 9x11
Basting, 1 Per dos..... \$4.50 5.50 6.50
New Haven..... 50¢
Wire Goods Co..... 65¢10¢

Buckets, Well—

Galvanized—
Hill's..... \$ dos, 12 qt, \$4.25; 14 qt, \$5.25
Iron Clad..... \$ dos, 14 qt, \$4.25 @ \$4.50
Helwig's Flat Iron Band..... 33¢4¢10¢
Helwig's Wired Top..... \$ dos \$4.00

Bull Rings—See Rings, Bull.

Butchers' Cleavers—See Cleavers Butchers'.

Butts—

Brass—
Wrought Brass..... 75¢10¢80¢
Cast Brass, Tiebout's..... 50¢
Cast Brass, Corbin's, Fast..... 33¢4¢10¢
Cast Brass, Loose Joint..... 35¢4¢10¢

Cast Iron—

Fast Joint, Narrow..... 50¢10¢5¢60¢
Fast Joint, Broad..... 50¢10¢60¢

Loose Joint.....
Loose Joint, Japanned.....
Loose Joint, Jap. with Acorns.....
Parliament Butts.....
Mayer's Hinges.....
Loose Pin, Acorns.....
Loose Pin, Acorns, Japanned.....
Loose Pin, Acorns, Japanned, Flated Tips.....

Wrought Steel—

Fast Joint, Narrow.....
Fast Joint, L. Narrow.....
Fast Joint, Broad.....
Loose Joint, Broad.....
Table Butts, Back Flaps, &c.....
Inside Blind, Regular.....
Inside Blind, Light.....
Loose Pin.....
Bronzed Wrought Butts.....

Callipers—See Compasses.

Chalks, Toe—

Gautier, One Prong, Blunt..... 5¢4¢5¢
Burke's, One Prong, Blunt..... 5¢4¢5¢
Burke's, Two Prong, Blunt..... 7¢4¢5¢
Burke's, One Prong, Sharp..... 6¢4¢7¢

Can Openers—See Openers, Can.

Cards—List January 28, 1891.

Watson's Cotton, Wool, Horse and File..... 25¢

Carpet Stretchers—See Stretchers, Carpet.

Carpet Sweepers—See Sweepers, Carpet.

Cartridges—See Ammunition.

Casters—

Bed.....
Shallow Socket.....
Deep Socket.....
Yale Casters, list May, 1884.....
Yale, Gem.....
Martin's Patent (Phoenix).....
Payson's Anti-Friction.....
Giant Truck Casters.....
Stationary Truck Casters.....
Socket Truck Casters.....

Cattle Leaders—See Leaders, Cattle.

Cement.

Victor Elastic..... 5 b pails \$ 5 @ 5¢

Chain—

Trace, Wagon and Fancy Chains, list revised April 21, 1890..... 60¢
American Coil, in oak lots, 3-10 1/2, 5-10 1/2, 7-10 1/2, 9-10 1/2, 11-10 1/2, 13-10 1/2, 15-10 1/2, 17-10 1/2, 19-10 1/2, 21-10 1/2, 23-10 1/2, 25-10 1/2, 27-10 1/2, 29-10 1/2, 31-10 1/2, 33-10 1/2, 35-10 1/2, 37-10 1/2, 39-10 1/2, 41-10 1/2, 43-10 1/2, 45-10 1/2, 47-10 1/2, 49-10 1/2, 51-10 1/2, 53-10 1/2, 55-10 1/2, 57-10 1/2, 59-10 1/2, 61-10 1/2, 63-10 1/2, 65-10 1/2, 67-10 1/2, 69-10 1/2, 71-10 1/2, 73-10 1/2, 75-10 1/2, 77-10 1/2, 79-10 1/2, 81-10 1/2, 83-10 1/2, 85-10 1/2, 87-10 1/2, 89-10 1/2, 91-10 1/2, 93-10 1/2, 95-10 1/2, 97-10 1/2, 99-10 1/2, 10

Chucks—

Bench Pat.	each, \$8.00	20%
Morse's Adjustable	each, \$7.00	20@20%
Danbury	each, \$6.00	30@30%
Syracuse, Bala Pat.	each, \$3.50	25%
Graham Patent	each, \$3.50	30%
Skinner's Patent Chucks	each, \$3.50	30%
Combination Lathe Chucks	each, \$3.50	30%
Universal Lathe Chucks	each, \$3.50	30%
Independent Lathe Chucks	each, \$3.50	30%
Drill Chucks	each, \$3.50	30%
Union Mfg. Co.	each, \$8.50	25%
Victor	each, \$8.50	25%
Combination	each, \$8.50	25%
Universal	each, \$8.50	25%
Independent	each, \$8.50	25%

Churns.

Tiffin Union	each, 5 gal. \$3.25; 7 gal. \$3.75; 10 gal. \$4.25
McDermid Star Barrel Churn	each, 6 gal. \$2.60; 10 gal. \$2.75; 15 gal. \$3.00; 20 gal. \$3.25

Clamps—

R. I. Tool Co.'s Wrought Iron	each, \$2.50
Adjustable, Cincinnati	each, \$2.50
Adjustable, Hammers	each, \$2.50
Adjustable, Stearn's	each, \$2.50
Stearns' Adjustable Cabinet and Corner	each, \$2.50
Cabinet, Sargent's	each, \$2.50
Carriage Makers', P. S. & W. Co.	each, \$2.50
Eberhard Mfg. Co.	each, \$2.50
Parallel, C. H. Besly & Co.	each, \$2.50
Warner's	each, \$2.50
Saw Clamps, see Vises, Saw Filers	
Carpenters', Cincinnati	each, \$2.50

Cleavers.

Butchers'	
Bradley's	each, \$2.50
L. & J. White	each, \$2.50
Beatty's	each, \$2.50
New Haven Edge Tool Co.	each, \$2.50
P. S. & W.	each, \$2.50
Foster Bros.	each, \$2.50
Schulte, Lohoff & Co.	each, \$2.50

Clips—

Norway, Axle, 1/4 & 5-16	each, \$5.50
2nd grade Norway Axle, 1/4 & 5-16	each, \$5.50
Superior Axle Clips	each, \$5.50
Norway Spring Bar Clips, 5-16	each, \$5.50
Wrought-Iron Felice Clips	each, \$5.50
Steel Felice Clips	each, \$5.50
Baker Axle Clips	each, \$5.50

Cloth and Netting, Wire—See Wire, &c.

Ceekvees.

Ceekvees	each, \$5.00
----------	--------------

Cocks, Brass.

Hardware list	each, \$5.00
---------------	--------------

Coffee Mills—See Mills, Coffee.**Collars, Dog, &c.**

Medford Fancy Goods Co.	each, \$4.00
Embossed, Gilt, Pope & Steven's	each, \$4.00
Leather, Pope & Steven's list	each, \$4.00
Brass, Pope & Steven's list	each, \$4.00
Chapman Mfg. Company	each, \$4.00

Combs, Curry.

Fitch's	each, \$5.00
Rubber, per doz	\$10.00
Perfect	each, \$5.00

Compasses, Dividers, &c.—

Compasses, Callipers, Dividers	70@70
Bemis & Call Co.'s	
Dividers	60@55
Compasses & Callipers	50@55
Wing and Inside or Outside	50@55
Double	60@55
(Call's Pat. Inside)	60@55
Excelsior	60@55
J. Stevens & Co.'s	60@55
Starrett's	
Spring Callipers and Dividers	25@105
Lock Callipers and Dividers	25@105
Combination Dividers	25@105

Coopers' Tools—See Tools, Coopers'.**Cord—**

Sash	
Common	each, \$10.00
Patent, good quality	each, \$10.00
White Cotton Braided, fair	each, \$10.00
Common Russia Sash	each, \$10.00
Patent	each, \$10.00
Cable Laid Italian Sash	each, \$10.00
Indian Cable Laid	each, \$10.00
Silver Lake	
A Quality, White, 50#	each, \$10.00
A Quality, Drab, 50#	each, \$10.00
B Quality, White, 50#	each, \$10.00
B Quality, Drab, 50#	each, \$10.00
C Quality, White (only)	each, \$10.00
Sylvan Spring, Extra Braided, White, 34#	each, \$10.00
Sylvan Spring, Extra Braided, Drab, 34#	each, \$10.00
Semper Idem, Braided, White, 30#	each, \$10.00
Egyptian, India Hemp, Braided, 25#	each, \$10.00
Samson—	
Braided, White Cotton, 50#	each, \$10.00
Braided, Drab Cotton, 50#	each, \$10.00
Braided, Italian Hemp, 50#	each, \$10.00
Braided, Linen, 80#	each, \$10.00
Iate & Co. Braided Wire, #100 ft.	each, \$10.00

Wire Picture.

Braided or Twisted	each, \$7.50
--------------------	--------------

Corkscrews—See Screws, Cork.**Corn Knives and Cutters—See Knives, Corn.****Crackers, Nut—**

Table (H. & B. Mfg. Co.)	each, \$4.00
Blake's Pattern	each, \$2.00
Turner & Seymour Mfg. Co.	each, \$2.00

Cradles—

Grain	each, \$5.00
-------	--------------

Crayons.

White Crayons, # gr. 12@12	each, \$1.00
D. M. Stewart Mfg. Co., Metal Work—	
ers, # gr. \$2.50	each, \$2.50
D. M. Stewart Mfg. Co., Rolling Mill	each, \$2.50
See also Chalk	

Crow Bars—See Bars, Crow.**Curry Combs—See Combs, Curry.****Curtain Pins—See Pins, Curtain****Cutters—**

Meat	
Dixon's # dos	each, \$4.00
Nos. 1 2 3 4 5	
\$14.00 \$17.00 \$19.00 \$20.00	

Woodruff's # dos	each, \$4.00
Nos. 1 2 3 4 5	
\$15.00 \$18.00 \$20.00 \$22.00	

Hales Pattern # dos	each, \$4.00
Nos. 1 2 3 4 5	
\$17.00 \$18.00 \$19.00 \$20.00	

American	each, \$4.00
Nos. 1 2 3 4 5	
\$5 \$7 \$10 \$12 \$15	

Enterprise	each, \$4.00
Nos. 1 2 3 4 5	
\$3 \$5 \$7 \$9 \$11	

Great American Meat Cutter	each, \$4.00
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

Miles' Challenge # dos	each, \$4.00
Nos. 1 2 3 4 5	
\$12.00 \$13.00 \$14.00 \$15.00	

Home No. 1	each, \$4.00
Nos. 1 2 3 4 5	
\$12.00 \$13.00 \$14.00 \$15.00	

Draw Cut, each	each, \$4.00
Nos. 1 2 3 4 5	
\$50 \$75 \$100 \$125 \$150	

Great American	each, \$4.00
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

Beef Shavers (Enterprise)	each, \$4.00
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

Little Giant	each, \$4.00
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

Chadborn's Smoked Beef Cutter	each, \$4.00
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

Tobacco.

Champion	each, \$4.00
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

Wood Bottom	each, \$4.00
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

All Iron	each, \$4.00
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

Nashua Lock Co.'s	each, \$4.00
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

Wilson's	each, \$4.00
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

Sargent's	each, \$4.00
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

Acme	each, \$4.00
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

Washer.

Smith's Pat.	each, \$4.00
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

Johnson's	each, \$4.00
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

Penny's # dos Pol. #14; Jap'd, #16, 55#	
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

Appleton's	each, \$4.00
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

Bonney's	each, \$4.00
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

Cincinnati	each, \$4.00
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

Cutlery—

Pocket and Table	each, \$4.00
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

Wostenholm	each, \$4.00
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

Dampers, &c—

Dampers, Buffalo	each, \$4.00
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

Buffalo Damper Clips	each, \$4.00
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

Crown Damper	each, \$4.00
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

Excelsior	each, \$4.00
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

Diggers, Post Hole, &c—

Samson Post Hole Digger	each, \$4.00
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

Fletcher Post Hole Augers	each, \$4.00
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

Eureka Diggers	each, \$4.00
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

Lead's	each, \$4.00
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

Vaughan's Post Hole Auger	each, \$4.00
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

Kohler's Little Giant	each, \$4.00
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

Kohler's Hercules	each, \$4.00
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

Kohler's New Champion	each, \$4.00
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

Schneider	each, \$4.00
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

Ryan's Post Hole Diggers	each, \$4.00
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

Cronk's Post Bars	each, \$4.00
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

Gibbs Post Hole Digger	each, \$4.00
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

Imperial	each, \$4.00
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

Dividers—

See Compasses	
---------------	--

Dog Collars—See Collars, Dog, &c.**Door Springs—See Springs, Door.****Drawers.**

Money, # dos	each, \$18.25
--------------	---------------

Drawing Knives—See Knives, Drawing.**Drills and Drill Stocks—**

Blacksmith's	each, \$1.75
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

Blacksmith's Self-Feeding	each, \$7.50
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

Breast, P. S. & W.	each, \$4.00
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

Breast, Wilson's	each, \$4.00
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

Breast, Millers Falls	each, \$4.00
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

Breast, Bartholomew's	each, \$4.00
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

Ratchet, Merrill's	each, \$4.00
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

Ratchet, Ingersoll's	each, \$4.00
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

Ratchet, Parker's	each, \$4.00
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

Ratchet, Whitney's	each, \$4.00
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

Ratchet, Weston's	each, \$4.00
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

Ratchet, Moore's Triple Action	each, \$4.00
Nos. 1 2 3 4 5	
\$11 \$12 \$13 \$14 \$15	

No. 1 Forged Blade.....	60¢	10¢	10¢
Nos. 20, 30 and 60.	60¢	10¢	10¢
R. S. & H.			50¢

Roggin's Latches.....\$ dos 30¢ to 35¢
 Bronze Iron Drop Latches.....\$ dos 70¢ net
 Jap'd Store Door Handles—Nuts, 1.05;
 Plate, 1.10; no Plate, .88.....net
 Barn Door, \$ dos 1.40.....10¢ to 10¢
 Chest and Lifting.....70¢

Wood—

Saw and Plane.....40¢ to 10¢ to 10¢
 Hammer, Hatchet, Axe, Sledge, &c.....40¢
 Brad Axl.....\$ gr 2.50
 Hickory Firmer Chisel, ass'd.....\$ gr 2.50
 Hickory Firmer Chisel, large.....\$ gr 5.00
 Apple Firmer Chisel, ass'd.....\$ gr 5.00
 Apple Firmer Chisel, large.....\$ gr 6.00
 Socket Firmer Chisel, ass'd.....\$ gr 5.00
 Socket Framing Chisel, ass'd.....\$ gr 5.00
 J. S. Smith & Co.'s Pat File.....50¢
 File, assorted.....\$ gr 7.75
 Auger, assorted.....\$ gr 5.00
 Auger, large.....\$ gr 7.00
 Pat. Auger, Ives.....30¢ to 10¢
 Pat. Auger, Douglass.....\$ set 1.25
 Pat. Auger, Swan's.....\$ set 1.00
 Hoe, Rake, Shovel, &c.....50¢ to 10¢

Hangers—

Barn Door, old patterns.....60¢ to 10¢ to 70¢
 Barn Door, New England.....60¢ to 10¢ to 70¢
 Samson Steel Anti-Friction.....55¢
 Orleans Steel.....55¢
 Hamilton Wrought Wood Track.....55¢
 U. S. Wood Track.....55¢
 Champion.....60¢ to 10¢
 Rider and Wooster, Medina Mfg. Co.'s.....70¢
 Climax Anti-Friction.....55¢
 Climax Anti-Friction for Wood Tracks.....55¢
 Zenith for Wood Track.....55¢
 Reed's Steel Arm.....50¢
 Challenge, Barn Door.....50¢
 Sterling.....50¢ to 10¢
 Victor, No. 1, \$15.00; No. 2, \$15.50; No. 3, \$16.00.....50¢ to 25¢
 Cheritree.....50¢ to 10¢
 Kidder's.....50¢ to 10¢
 The Boss.....50¢ to 10¢
 Best Anti-Friction.....50¢ to 10¢
 Duplex (Wood Track).....50¢ to 10¢
 Terry's Pat., \$ dos pr. 4 in., \$10.00; 5 in., \$12.00.....50¢ to 10¢
 Terry's Steel Anti-Friction Leader 60¢ to 10¢
 Terry's Steel Anti-Friction Ideal.....50¢ to 10¢
 Cronk's Patent, Steel Covered.....50¢ to 10¢
 Wood Track Iron Clad, \$ ft. 10¢.....50¢ to 10¢
 Carrier Steel Anti-Friction.....50¢ to 10¢
 Architect, \$ set 80.00.....50¢ to 10¢
 Eclipse.....50¢ to 10¢
 Felix, \$ set 4.50.....50¢ to 10¢
 Richards.....50¢ to 10¢
 Lane's Standard.....50¢ to 10¢
 Lane's New Standard.....50¢ to 10¢
 Ball Bearing Door Hanger.....50¢ to 10¢
 Warner's Pat.....50¢ to 10¢
 Stearns' Anti-Friction 20¢ to 10¢ to 10¢
 Stearns' Challenge.....50¢ to 10¢
 Faultless.....40¢ to 40¢
 American, \$ set 60.00.....50¢ to 10¢
 Rider & Wooster, No. 1, 62¢; No. 2, 75¢.....50¢ to 10¢
 Paragon, Nos. 1, 2 and 3.....40¢ to 10¢
 Cincinnati.....40¢ to 10¢
 Paragon, Nos. 5, 6, 7 and 8.....40¢ to 10¢
 Crescent.....60¢ to 10¢
 Nickel Cast Iron.....50¢
 Nickel, Malleable Iron and Steel.....40¢
 Seranton Anti-Friction Single Strap 35¢
 Wild West, 4 in. Wheel, \$15.00; 5 in. Wheel, \$21.00.....45¢
 Star.....40¢ to 10¢
 May.....50¢ to 10¢
 Barry, \$60.00.....40¢ to 10¢
 Interstate.....50¢
 Magic.....45¢

Harness Snaps—See Snaps.

Hatchets—

American Axe and Tool Co.....40¢ to 10¢
 Blood's.....50¢ to 10¢
 Hunt's.....50¢ to 10¢
 Hurd's.....50¢ to 10¢
 Mann's.....50¢ to 10¢
 Peck's.....50¢ to 10¢
 Underhill's.....40¢ to 10¢
 Buffalo Hammer Co.....50¢ to 10¢
 Fayette R. Plumb.....50¢ to 10¢
 C. Hammond & Son.....50¢ to 10¢
 Kelly's.....50¢ to 10¢
 Sargent & Co.....50¢ to 10¢
 F. S. & W. Co.....50¢ to 10¢
 Ten Eyck Edge Tool Co.....50¢ to 10¢
 Collins.....50¢ to 10¢
 Schulte, Loboff & Co.....50¢ to 10¢

Hay and Straw Knives—See

Knives.

Hinges—

Blind Hinges—

Parker.....75¢ to 25¢
 Palmer.....50¢ to 10¢
 Seymour.....70¢ to 25¢
 Huffer.....50¢
 Clark's, Nos. 1, 3, 5, 40 and 60.....75¢ to 10¢ to 80¢
 Clark's Mortise Gravity.....60¢
 Sargent's, Nos. 1, 3, 5, 11, 13.....75¢ to 10¢ to 55¢ to 10¢
 Sargent's, No. 12.....77¢ to 10¢ to 10¢
 Reading's Gravity.....75¢ to 10¢ to 75¢ to 10¢
 Shepard's.....75¢ to 10¢
 Noiseless.....75¢ to 10¢
 Niagara.....80¢
 Buffalo.....80¢
 Clark's Genuine Pat' Form.....75¢ to 10¢
 O. S. Lull & Porter.....75¢ to 10¢
 Acme, Lull & Porter.....75¢
 Queen City Reversible.....70¢ to 10¢ to 75¢
 Clark's Lull & Porter, Nos. 0, 1, 14, 2, 24, 3.....75¢ to 10¢ to 25¢
 North's Automatic Blind Fixtures, No. 2, for Wood, \$9.00; No. 3, for brick, \$11.50.....10¢
 Gate Hinges—
 Western.....\$ dos 4.40, 60¢
 N. E.....\$ dos 4.70, 55¢
 N. E. Reversible.....\$ dos 5.20, 55¢ to 10¢
 Clark's, Nos. 1, 2, 3.....60¢ to 10¢
 V. Y. State.....\$ dos 5.00, 55¢ to 10¢
 Automatic.....\$ dos 12.50, 50¢
 Common Sense.....\$ dos pair 4.50, 50¢
 Seymour's.....45¢ to 10¢
 Shepard's.....60¢ to 10¢
 Sargent's Latch and Hinges.....\$ dos 12.00, 60¢

Spring Hinges—

Union Spring and Blank Butts.....40¢
 Year's Spring Hinge Co.'s list, March 1890.....50¢ to 10¢

Acme.....30¢
 J. S.....25¢ to 10¢
 Empire and Crown.....20¢
 Hero and Monarch.....55¢
 American, Gem, and Star.....20¢
 Oxford.....20¢
 Barker's Double Acting.....25¢
 Union Mfg. Co.....25¢
 Bommer's.....30¢
 Buckman's.....15¢ to 20¢
 Chas. A. G. O.....30¢
 Wilco.....30¢
 Devore's.....40¢
 Rex.....40¢
 Royal.....60¢
 Reliable.....60¢
 Champion.....60¢
 Bardsley's Patent.....40¢
 Stearns'.....40¢
 Niagara, Holdback pattern, per gross.....\$14.00

Wrought Iron Hinges

List February 14, 1891.
 Strap and T.....50¢ to 10¢
 Corrugated Strap and T.....50¢ to 10¢
 Screw Hook and (6 to 12 in., \$ dos 4¢; 14 to 20 in., \$ dos 3.5¢; 22 to 30 in., \$ dos 3¢)
 Strap.....\$ dos 4¢
 Screw Hook and Eye.....\$ dos 4¢
 Rolled Blind Hinges, Nos. 32 and 34.....50¢ to 10¢
 Rolled Blind Hinges, Nos. 232 and 234.....50¢ to 10¢
 Rolled Plate.....50¢ to 10¢
 Rolled Raised.....70¢ to 10¢
 Plate Hinges (8, 10 & 12 in., \$ dos 3¢; "Providence" over 12 in., \$ dos 4¢)

Hoes—

Eye—
 D. & H. Scovill.....20¢
 Lane's Crescent Planters Pattern.....45¢ to 55¢
 Lane's Razor Blade, Scovill Pattern.....30¢
 Maynard, S. & O. Pat.....45¢ to 55¢
 Sandusky Tool Co., S. & O. Pat.....50¢ to 10¢
 Am. Axe and Tool Co., S. & O. Pat.....50¢ to 10¢
 Chattanooga Tool Co., S. & O. Pat.....50¢ to 10¢
 Grub.....60¢ to 10¢
 Handled—
 Garden, Mortar, &c.....65¢ to 65¢ to 10¢
 Planter's, Cotton &c.....65¢ to 65¢ to 10¢
 Warren Hoe.....60¢
 Magic.....\$ dos 4.00

Hog Rings and Rings—See

Rings and Rings.

Hoisting Apparatus—See

Machines, Hoisting.

Hollow-Ware—See Ware, Hollow.

Holders.

Bag.
 Sprengle's Pat.....\$ dos 18.....60¢
 Bit.
 Extension.
 Barber's, \$ dos 15.00.....40¢ to 40¢ to 10¢
 Ives, \$ dos 20.00.....60¢ to 60¢ to 10¢
 Diagonal.....\$ dos 24.00, 40¢
 Angular.....\$ dos 24.00, 40¢ to 5¢
 File and Tool—
 Bais Pat.....\$ dos 4.00; 25¢
 Nicholson File Holder.....20¢
 Dick's Tool Holder.....20¢

Hooks—

Cast Iron—
 Bird Cage, Sargent's list.....60¢ to 10¢ to 10¢
 Bird Cage, Reading.....60¢ to 10¢ to 10¢
 Clothes Line, Sargent's list.....60¢ to 10¢ to 10¢
 Clothes Line, Reading list.....60¢ to 10¢ to 10¢
 Harness, Reading list.....55¢ to 10¢ to 55¢ to 10¢
 Coat and Hat, Sargent's list.....55¢ to 10¢ to 55¢ to 10¢
 Coat and Hat, Reading.....50¢ to 10¢ to 50¢ to 10¢
 Wrought Iron—
 Cotton.....\$ dos 1.25
 Cotton Pat. (N.Y. Mallet & Handle Wks.).....30¢
 Tassel and Picture (T. & S. Mfg. Co.).....50¢
 Wrought Staples, Hooks, &c.....See Wrought Goods.

Wire—

Wire Coat and Hat, Gem, list April, 1886.....60¢
 Wire Coat and Hat, Miles', list April, 1886.....60¢
 Wire Coat and Hat, Standard.....60¢
 Handy Hat and Coat.....50¢ to 10¢
 Steady Ceiling Hooks.....50¢ to 10¢
 Belt.....80¢ to 10¢
 Atlas, Coat and Hat.....60¢
 Miscellaneous.
 Grass, No. 2, \$2.00; No. 3, \$2.25; No. 4, \$2.50
 Noll's Grass.....\$ dos 2.25
 Rush.....55¢ to 60¢
 Whitetree—Patent.....55¢
 Hooks and Eyes—Malleable Iron.....70¢ to 10¢
 Hooks and Eyes—Brass.....60¢ to 10¢ to 10¢
 Fish Hooks, American.....50¢
 Bench Hooks.....See Bench Stops.

Horse Nails—See Nails, Horse.

Horse Shoes—See Shoes, Horse.

Hose, Rubber—

Competition.....75¢ to 75¢ to 55¢
 Standard.....60¢ to 10¢ to 60¢ to 10¢
 Extra.....60¢ to 10¢ to 60¢
 N. Y. B. & P. Co., Para.....25¢ to 55¢
 N. Y. B. & P. Co., Extra.....40¢ to 40¢ to 55¢
 N. Y. B. & P. Co., Dundee.....40¢ to 10¢ to 60¢
 Huskers—
 Blair's Adjustable.....\$ gr 8.00
 Blair's Adjustable Clipper.....\$ gr 7.50
 Hubbard's Solid Steel.....\$ gr 4.00

Indurated Fiber-Ware—See

Ware, Indurated Fiber.

Irons.

Sad—
 From 4 to 10, at factory.....\$ 100
 Self-Heating.....\$ dos 2.30 to 2.40
 Self-Heating, Tailors.....\$ dos 18.00 net
 Mrs. Pott's Irons.....50¢ to 55¢
 Enterprise Star Irons.....50¢ to 55¢
 XX Cold Handle Sad Irons.....50¢ to 55¢

Ideal Irons new list 50¢ to 10¢ to 50¢ to 10¢
 Salamander, Irons.....25¢
 B. H. Sad Irons, \$ dos 3.00, 3.50, 4.00
 Combined Fluter and Sad Iron, \$ dos 15.00
 Fox Reversible, Self-Fluter \$ dos 24.00
 Chinese Laundry (N.E. Butt Co.) 8 1/2¢, 15¢
 New England.....50¢, 15¢
 Mahony's Troy Pol. Irons.....25¢
 Sensible, list Jan. 31.....50¢ to 10¢ to 55¢
 Sensible Tailor's Irons.....33 1/2¢
 National Self-Heating.....30¢

Soldering—

Soldering Coppers.....\$ dos 22 to 23¢
 Covert's Adjustable, list Jan. 1, 1886.....85¢ to 25¢

Irons, Pinking, per dos., 65¢.

Jack Screws—See Screws.

Jacks, Wagon.

Daisy.....33 1/2¢
 Victor.....33 1/2¢

Kettles—

Brass, Spun, Plain, list Jan. 1, '91.....25¢ to 55¢
 Brass, Spun, Plain, W.M. list Jan. 1, '91.....20¢
 Enamelled and Tea—See Hollow Ware.

Keys—

Lock Ass'n list Dec. 30, 1888.....50¢ to 10¢

Eagle, Cabinet, &c.....60¢ to 55¢
 Hotchkiss' Brass Blanks.....40¢
 Hotchkiss, Copper and Tinned.....40¢
 Hotchkiss' Pad, and Cab.....35¢
 Ratchet Red Key.....\$ dos 1.15
 Wollensak Tinned.....50¢ to 10¢

Knife Sharpeners—See Sharpeners, Knife.

Knives.

Butcher, Shoes, &c—

Wilson's Butcher Knives, list Dec. 8, 1889.....25¢
 Ames' Butcher Knives.....25¢
 Foster Bros', Butcher, &c.....40¢
 Jordan's A.A.A.I., Butchers', list.....net
 Nichols' Butcher Knives.....40¢ to 10¢
 W. W. Wilson, Butcher, 6 in., \$2.00; 7 in., \$2.70; 8 in., \$3.80, &c.....20¢ to 25¢
 Ames' Bread Knives.....\$ dos 1.50, 15¢ to 20¢
 Moran's Shoe and Bread.....20¢
 Hay and Straw.....See Hay Knives.

Table and Pocket—See Cutlery.

Corn, Auburn Mfg. Co. Western Pat.....\$2.00
 Corn, Auburn Mfg. Co. Crescent.....\$3.50

Corns.

Bradley's.....10¢
 Wadsworth's.....10¢

Drawing—

Witherby.....\$ dos 75¢ to 10¢
 P. S. & W.....\$ dos 75¢ to 10¢
 Mix.....\$ dos 75¢ to 10¢
 New Haven.....\$ dos 75¢ to 10¢
 Merrill.....\$ dos 75¢ to 10¢
 Douglas.....\$ dos 75¢ to 10¢
 Watrous.....\$ dos 75¢ to 10¢
 L. & J. White.....\$ dos 75¢ to 10¢
 Bradley's.....\$ dos 75¢ to 10¢
 Adjustable Handle.....\$ dos 75¢ to 10¢
 Wilkinson's Folding.....\$ dos 75¢ to 10¢

Hay and Straw—

Lighting, Mrs. price \$ dos 18.00, 25¢
 But jobbers cut this price freely, often selling at \$8 to \$8.50.

Wadsworth's.....40¢ to 75¢ to 40¢ to 10¢
 Carter's Needle.....\$ dos 11.00 to 11.50
 Heath's.....\$ dos 13.00 to 13.50
 Auburn Hay, Com. and Spear Point.....40¢
 Auburn, Straw.....60¢
 Noll's Hay.....\$ dos 7.00 to 7.50

Machines.

Am. (2d quality), \$ gr. 1 blade, \$7;
 2 blades, \$12; 3 blades, \$18.....net
 Lothrop's.....20¢ to 10¢
 Smith's, \$ dos, Single, \$2.00; Double, \$3.....40¢ to 45¢
 Knapp & Cowles.....50¢ to 10¢ to 60¢
 Buffalo Adjustable.....\$ dos 3.00, 25¢
 Buffalo Double Adj'table, \$ dos 3.00, 25¢

Knobs—

Door Mineral.....60¢ to 65¢
 Door Por. Jap'd.....70¢ to 75¢
 Door Por. Nickel.....\$2.00 to 2.25
 Door Por. Plated, Nickel.....\$2.00 to 2.25
 Drawer, Porcelain.....60¢ to 10¢ to 10¢ to 10¢
 Hemlock Door Knobs.....40¢ to 10¢ to 40¢
 Yale & Towne Wood, list Dec., 1885.....40¢
 Furniture Plain.....75¢ gro 10¢ to 10¢
 Furniture, Wood Screws.....25¢ to 10¢
 Base, Rubber Tip.....70¢ to 10¢ to 70¢
 Picture, Judd's.....60¢ to 10¢ to 70¢
 Picture, Sargent's.....70¢ to 10¢
 Picture, Hemlock.....35¢ to 55¢
 Shutter, Porcelain.....60¢ to 10¢
 Carriage Jap.....\$ gr 80¢, 60¢ to 10¢
 Bardsley's Wood Door, Shutter, &c.....40¢

Ladies—

Melting, Sargent's.....55¢ to 10¢
 Melting, Reading.....35¢ to 10¢
 Melting, Monroe's Pat.....\$ dos 4.00, 40¢
 Melting, P. S. & W.....35¢ to 10¢ to 40¢
 Melting, Warner's.....30¢

Lanterns—

Tubular.

Plain with Guards, \$ dos.....\$3.75
 Lift Wire, with Guards.....\$4.00
 Square Flut, with Guards.....\$3.75
 Sq. Lift Wire, with Guards.....\$4.50
 Without Guards, 25¢ \$ dos less.

Police Lanterns (including packages).

2 1/2-inch Bull's-eye Police regular.....\$ dos 3.50
 3-inch Bull's-eye Police regular.....\$ dos 3.90
 2 1/2-inch Bull's-eye Police flash light.....\$ dos 4.00
 3-inch Bull's-eye Police flash light.....\$ dos 4.50

Lawn Mowers—See Mowers, Lawn.

Leaders, Cattle.

Hargis's, Beckler & Co.'s.....70¢
 Hotchkiss.....30¢
 Peck, Stow & W. Co.....60¢ to 10¢

Lemon Squeezers—See Squeezers, Lemon.

Lifters, Transom.

Wollensak's:
 Class 3 and 4, Bronzed Iron.....50¢
 Class 3 and 4, Bronzed Metal.....25¢
 Class 3 and 4, Brass.....35¢
 Skylight Lifters.....35¢
 Crown, Eagle and Shield.....50¢
 Reiter's, list Feb. 20, 1891.....50¢ to 10¢ to 10¢ to 25¢
 Bronzed Iron Rods.....50¢ to 10¢ to 10¢ to 25¢
 Brass, Real Bronze or Nickel Plate, 30¢

Excelsior.....50¢ to 10¢ to 25¢

Shaw's.....50¢ to 10¢

Payson's.....50¢

Universal.....50¢

Solid Grip.....50¢

Imperial.....50¢ to 10¢

Lines—

Cotton and Linen Fish, Draper's.....50¢

Draper's and Tate's Chalk.....50¢

Draper's Masons' Linen, 84 ft., No. 1, \$1.25; No. 2, \$1.75; No. 3, \$2.25; No. 4, \$2.75; No. 5, \$3.25.....25¢

Cotton Chalk.....50¢

Samson Cotton, No. 4, \$2; No. 4 1/2, \$2.50; No. 5, \$3.....10¢

Silver Lake, Braided, No. 3, \$ dos 0; No. 1, \$ dos 0; No. 2, \$ dos 0; No. 3, \$ dos 0.....25¢

Mason's Linen, No. 3 1/2, \$1.50; No. 4, \$2.00; No. 4 1/2, \$2.50.....45¢

Mason's Colored Cotton.....15¢

Wire Clothes, Nos. 12, 15, 20, 100 ft.....\$4.00 \$3.50 \$3.00

Ventilator Cord, Samson Braided, White or Drab Cotton.....\$ dos 7.50, 20¢

Locks, &c.—

Cabinet—
 Eagle, Gaylor Par.....list March, '84, rev. ker and Corbin.....33 1/2¢ to 25¢
 Delta, Nos. 36 to 39.....40¢
 Delta, Nos. 51 to 63.....40¢ to 10¢
 Delta, Nos. 86 to 96.....30¢
 Stoddard Lock Co.....30¢ to 35¢
 "Champion" Night Latches.....40¢
 Barnes Mfg. Co.....40¢ to 40¢ to 10¢
 Eagle and Corbin Trunk.....25¢ to 25¢
 "Champion" Cab. and Combin.....33 1/2¢
 Yale.....\$ dos 1.25, 1.50, 1.75, 2.00, 2.25, 2.50, 2.75, 3.00, 3.25, 3.50, 3.75, 4.00, 4.25, 4.50, 4.75, 5.00, 5.25, 5.50, 5.75, 6.00, 6.25, 6.50, 6.75, 7.00, 7.25, 7.50, 7.75, 8.00, 8.25, 8.50, 8.75, 9.00, 9.25, 9.50, 9.75, 10.00, 10.25, 10.50, 10.75, 11.00, 11.25, 11.50, 11.75, 12.00, 12.25, 12.50, 12.75, 13.00, 13.25, 13.50, 13.75, 14.00, 14.25, 14.50, 14.75, 15.00, 15.25, 15.50, 15.75, 16.00, 16.25, 16.50, 16.75, 17.00, 17.25, 17.50, 17.75, 18.00, 18.25, 18.50, 18.75, 19.00, 19.25, 19.50, 19.75, 20.00, 20.25, 20.50, 20.75, 21.00, 21.25, 21.50, 21.75, 22.00, 22.25, 22.50, 22.75, 23.00, 23.25, 23.50, 23.75, 24.00, 24.25, 24.50, 24.75, 25.00, 25.25, 25.50, 25.75, 26.00, 26.25, 26.50, 26.75, 27.00, 27.25, 27.50, 27.75, 28.00, 28.25, 28.50, 28.75, 29.00, 29.25, 29.50, 29.75, 30.00, 30.25, 30.50, 30.75, 31.00, 31.25, 31.50, 31.75, 32.00, 32.25, 32.50, 32.75, 33.00, 33.25, 33.50, 33.75, 34.00, 34.25, 34.50, 34.75, 35.00, 35.25, 35.50, 35.75, 36.00, 36.25, 36.50, 36.75, 37.00, 37.25, 37.50, 37.75, 38.00, 38.25, 38.50, 38.75, 39.00, 39.25, 39.50, 39.75, 40.00, 40.25, 40.50, 40.75, 41.00, 41.25, 41.50, 41.75, 42.00, 42.25, 42.50, 42.75, 43.00, 43.25, 43.50, 43.75, 44.00, 44.25, 44.50, 44.75, 45.00, 45.25, 45.50, 45.75, 46.00, 46.25, 46.50, 46.75, 47.00, 47.25, 47.50, 47.75, 48.00, 48.25, 48.50, 48.75, 49.00, 49.25, 49.50, 49.75, 50.00, 50.25, 50.50, 50.75, 51.00, 51.25, 51.50, 51.75, 52.00, 52.25, 52.50, 52.75, 53.00, 53.25, 53.50, 53.75, 54.00, 54.25, 54.50, 54.75, 55.00, 55.25, 55.50, 55.75, 56.00, 56.25, 56.50, 56.75, 57.00

Shepard Hand Fluter, No. 110 # dos \$11.00.....40%
 Shepard Hand Fluter, No. 95 # dos \$8.00.....40%
 Clark's Hand Fluter # dos \$15.00.....35%
 Combined Fluter and Sad Iron.....30%
 Buffalo # dos \$15.00.....30%
 # dos \$10.00.....10%

Hoisting—
 Moore's Hand Hoist, with Lock Brake.....20%
 Moore's Differential Pulley Block.....40%
 Energy Mfg. Co.'s.....25%
 Sure Grip Steel Tackle Blocks.....25%

Washing—
 Anthony Wayne, # dos No. 1, #51; No. 2, #42.....40%
 Western Star, # dos No. 2, #45; No. 3, #48.....40%

Mallets.
 Hickory.....20%
 Wire Nails, # dos No. 1, #51; No. 2, #42.....40%
 B. & L. Block Co., Hickory & L. V. # dos \$30.00.....10%

Mattocks. Regular list.....80%
 # dos \$10.00.....10%

Measures—
 Standard Fiberglass, No. 1, peck, # dosen, #4; 1/2-peck, #3.50.....40%

Meat Cutters—See Cutters, Meat.

Mills.
 Coffee.....60%
 Box and Side, List Jan. 1, 1888.....60%
 American, Enterprise Mfg. Co. # dos \$10.00.....30%
 The Swift, Lane Bros.....40%

Mining Knives—See Knives, Mining.

Melanges Gates—See Gates, Melanges.

Money Drawers—See Drawers, Money.

Mowers, Lawn.
 Pennsylvania, New Model, Excelsior, Continental, &c.....60%
 Philadelphia.....40%
 Perfection.....40%
 Easy.....60%
 Other Machines.....60%

Muzzles—
 Safety.....# dos, \$3.00, 25%

Nails.
 Cut and Wire. See Trade Report.

Wire Nails, Papered.....75%
 Association list, July 15, '89.....75%
 Tack Mrs.' list.....70%
 Wire Nails, Standard Penny.....70%
 Card June 1, '89, base.....\$2.30 @ \$2.35

Horse—
 Nos. 6 7 8 9 10
 Ausable.....25%
 Clinton, Fin.....10%
 Essex.....25%
 Lyra.....10%
 Snowden.....10%
 Putnam.....25%
 Vulcan.....25%
 Northwest.....25%
 Globe.....25%
 Boston.....25%
 A. C.....25%
 C. B.-K.....25%
 Maud S.....25%
 Champlain.....25%
 New Haven.....25%
 Saranac.....25%
 Champion.....25%
 Capewell.....25%
 Star.....25%
 Anchor.....25%
 Western.....25%
 Empire Bronzed.....14%

Picture—
 Brass Head, Sargent's list.....50%
 Brass Head, Combination list.....50%
 Porcelain Head, Sargent's list.....50%
 Porcelain Head, Combination list.....40%
 Niles' Patent.....40%

Nail Pullers—See Pullers, Nail.

Nail Sets—See Sets, Nail.

Nut Crackers—See Crackers, Nut.

Nuts—List Dec. 18, 1889.....40%

Hot Pressed—
 Square, 5.00; 6.00 off list.
 Cold Punched, 5.00; 6.00 off list.
 In packages of 100 lb. add 1-10% # net; in packages less than 100 lb. add 1/2% # net.

Oakum—
 Beet.....# 7 1/2 @ 7 1/2
 U. S. Navy.....# 6 1/2 @ 6 1/2
 Navy.....# 6 1/2 @ 6 1/2

Oilers.
 Zinc and Tin.....65%
 Brass and Copper.....50%
 Malleable, Hammer's Improved, No. 1, #3.60; No. 2, #4.00; No. 3, #4.40.....40%
 Malleable, Hammers, Old Pattern, same list.....40%
 Prior's Pat. or "Paragon" Zinc.....40%
 Prior's Pat. or "Paragon" Brass.....50%
 Olmstead's Tin and Zinc.....50%
 Olmstead's Brass and Copper.....50%
 Broughton's Zinc.....60%
 Broughton's Brass.....60%
 Gem P. D. & Co.....# gro, \$2
 Steel, Draper and Williams.....50%

Openers, Can.
 Messenger's Comet.....# dos \$3.00, 25%
 American.....# gross \$3.00, 25%
 Duplex.....# dos \$2.50, 15%
 Lyman's.....# dos \$3.75, 20%
 No. 5, French.....# dos \$2.25, 15%
 No. 5, Iron Handle.....# gr \$4.00, 45%
 Eureka.....# dos \$2.75, 15%
 Sardinia Scissors.....# dos \$2.75, 15%
 Star.....# dos \$3.75, 20%
 Sprague, No. 1, \$2.00; No. 2, \$2.25; No. 3, \$2.50.....50%
 Excelsior No. 1 \$2.50; No. 2, \$1.50.....40%

World's Best, # gross, No. 1, \$12.00; No. 2, \$24.00; No. 3, \$36.00.....50%
 Universal, # dos \$3.00.....45%
 Domestic, # dos \$2.50.....45%
 Champion # dos \$2.00.....45%

Packing, Steam—
 Rubber.....60%
 Standard.....60%
 Extra.....50%
 N. Y. B. & P. Co., Standard.....50%
 N. Y. B. & P. Co., Empire.....50%
 N. Y. B. & P. Co., Salamander.....50%
 Jenkins' Standard, # 80, # 25 @ 25%
 Miscellaneous.....10%
 American Packing.....10%
 Russia Packing.....10%
 Italian Packing.....10%
 Cotton Packing.....10%
 Jute.....10%

Padlocks—See Locks.

Pails.
 Galvanized Iron.....10%
 Quarts 10 12 14
 Hill's Light Weight, # dos, \$2.75 3.00 3.25
 Hill's Heavy Weight, # dos, 3.00 3.25 3.75
 Helwig's.....2.50 2.75 3.00
 Sidney Shepard & Co.....2.35 2.55 3.05
 Iron Clad.....2.50 2.75 3.00
 Fire Buckets.....2.75 3.25 3.50
 Buckets, see Well Buckets.

Indurated Fibre Ware—25%
 Star Pails, 12 qt.....# dos \$6.00
 Fire, Stable and Milk, 14 qt.....# dos \$7.50

Standard Fibre Ware—
 Plain, Dec'd
 Water Pails, 12 qt, per doz.....\$4.50
 Dairy Pails, 14 qt, per doz.....5.00
 Fire Pails, No. 1, 12 qt, per doz.....5.00
 Fire Pails, No. 2, 14 qt, per doz.....5.00
 Sugar Pails.....6.00 6.50
 Horse Pails.....5.00
 Buggy Pails.....4.00
 Slop Jars (bal. trap).....8.00 9.00
 Chamber Pails, 14-qt.....6.50 7.50

Dripping.
 Small sizes.....# 6 @ 6%
 Large sizes.....# 8 @ 8%
 Silver & Co. (Covered).....40%

Standard List:
 No.....0 1 2 3 4
 # dos.....\$3.00 \$3.75 \$4.25 \$4.75 \$5.25
 # dos.....\$6.00 \$7.00 \$8.00 \$9.00
 Polished, regular goods.....70%
 Acme Fry Fans.....60%

Dust—
 Steel Edge, No. 1.....# dos \$1.75

Paper and Cloth—
 Sand and Emery.....50%
 List April 19, 1889.....50%
 Sibley's Emery and Crocus Cloth.....30%

Parers.
 Apple.....# dos \$4.75
 Baldwin.....# dos 5.25
 Bonanza.....each 5.00
 Champion.....# dos 7.25
 Daisy.....each 4.00
 Dandy.....each 7.50
 Eureka, 1888.....each 16.00
 Family Bay State.....# dos 12.00
 Favorite.....# dos 5.00
 Gem.....# dos 5.25
 Gold Medal.....# dos 4.00
 Ideal.....# dos 4.00
 Improved Bay State.....# dos 27.00 @ 30.00
 Little Star.....# dos 4.50
 Monarch.....# dos 13.50
 New Lightning.....# dos 5.50
 Oriole.....# dos 4.00
 Penn.....# dos 4.00
 Perfection.....# dos 4.00
 Pomona.....# dos 4.00
 Rocking Table.....# dos 6.00
 Turntable.....# dos 4.50
 Victor.....# dos 13.50
 Waverly.....# dos 4.00
 White Mountain.....# dos 4.25
 72.....# dos 5.75
 78.....# dos 6.50

Potato—
 White Mountain.....# dos \$4.50
 Antrim Combination.....# dos \$5.50
 Hoosier.....# dos \$13.50
 Saratoga.....# dos \$5.50

Pencils—
 Faber's Carpenters.....high list 50%
 Faber's Round Gilt.....# gro \$5.25
 Dixon's Lead.....# gro \$4.50
 Dixon's Lumber.....# gro \$6.75
 Dixon's Carpenters.....10%

Picks—
 Railroad or Adze Eye, 5 to 6, \$12.00; 6 to 7, \$13.00.....60%
 Railroad or Adze Eye, 5 to 6, \$12.00; 6 to 7, \$13.00.....60%

Picture Nails—See Nails, Picture.

Pinking Irons—See Irons, Pinking.

Pins.
 Bow.....60%
 Humason, Beckley & Co.'s.....60%
 Sargent & Co.'s.....\$17 and \$18.....60%
 Peck, Stow & W. Co.....50%
 Curtain.....net
 White Enamel.....net
 Escutcheon.....60%
 Iron, list Nov. 11, 1888.....50%
 Brass.....60%

Pipe, Wrought Iron—
 List September 18, 1889
 1 1/2 and under, Plain.....55%
 1 1/2 and under, Galvanized.....45%
 1 1/2 and over, Plain.....60%
 1 1/2 and over, Galvanized.....52%
 Boiler Tubes.....55%
 Larger than 2 1/2.....60%

Planes and Plane Irons—
 Wood Planes.....35%
 Molding.....35%
 Bench, First Quality.....50%
 Bench, Second Quality.....55%
 Bailey's (Stanley R. & L. Co.).....40%

Iron Planes—
 Bailey's (Stanley R. & L. Co.).....40%
 Miscellaneous Planes (Stanley R. & L. Co.).....40%
 Victor Planes (Stanley R. & L. Co.).....40%

Steer's Iron Planes—
 Meriden Mfg. Iron Co.'s.....40%
 Davis's Iron Planes.....40%
 Birmingham Plane Co.....40%
 Gage Tool Co.'s Self-Setting.....40%
 Chaplin's Iron Planes.....40%
 Sargent's.....40%
 Standard Tool Co.....40%

Plane Irons—
 Butcher's.....\$5.00 @ \$5.25 to 2
 Buck Bros.....30%
 Auburn "Thistle".....35%
 Ohio.....35%
 Sandusky.....25%
 S. & J. White.....25%

Plates.
 Felloe.....# 6 @ 6%
 Pliers and Nippers.....50%
 Hall's No. 2, 5 in.....\$13.50; No. 4, 7 in.....20%
 Humason & Beckley Mfg. Co.....50%
 Lindsay's Giant.....40%
 Gas Pliers, Cutlar's Nickel Plated.....60%
 Eureka Pliers and Nippers.....25%
 Russell's Parallel.....60%
 P. S. & W. Cast Steel.....60%
 P. S. & W. Tinner's Cutting Nippers, add 6% dis 10%
 Carew's Pat. Wire Cutters.....30%
 Morrill's Parallel, # dos, \$12.00.....30%
 Cronk's 8 in., \$15.00; 10 in., \$21.00.....40%

Plumb and Levels—
 Regular List.....70%
 Diastion's.....50%
 Pocket Levels.....70%
 Davis Iron Levels.....30%
 Davis' Inclinometers.....10%

Poachers.
 Buffalo Steam Egg Poachers, # dos, No. 1, \$6.00; No. 2, \$9.00.....25%
 Silver & Co., 6-Ring.....# dos \$4; 3-Ring \$2

Pokes, Animal—
 Bishop's I. X.....# dos \$6.00
 Bishop's Pioner.....# dos \$3.75
 Bishop's American.....# dos \$2.75
 Eagle, Double Stale.....# dos \$5.75
 Eagle, Single Stale.....# dos \$3.75
 Buckeye, Single Stale.....# dos \$2.75

Police Goods.
 R. I. Tool Co., Handcuffs, \$15.00 # dos 10%
 R. I. Tool Co., Leg Irons, \$25.00 # dos 10%
 T. W. R.....25%
 Daley's Improved Handcuffs, 2 Hands, Polished, # dos \$48.00; Nickleled, \$57.00; 3 Hands, Polished, # dos \$72.00; Nickleled, \$84.00.....25%
 J. P. Lovell's Police Goods.....25%

Polish, Metal.
 Prestolite Paste.....35%
 Gaston's Silver Compound.....35%

Polish, Stove.
 Joseph Dixon's.....# gro \$6.00, 10%
 Gem.....# gro \$4.50, 10%
 Gold Medal.....# gro \$6.00, 25%
 Mirror.....# gro \$6.00, 25%
 Rusty.....# gro \$4.75
 Rising Sun, 5 gro lots.....# gro \$5.50
 Dixon's Plumbago.....# 8 @
 Boynton's Noon Day, # gro.....13.00
 Parlor Pride Stove Enamel.....# gro
 Yates' Liquid, 3 5 10 gal.....\$2 gal.....\$0.80 7.00 50
 Yates Standard Paste Polish, 10 lb cans.....# 12 @ 12%
 Jet Black.....# gro \$3.50
 Japanese.....# gro \$3.50
 Fireside.....# gro \$3.50
 Diamond O. U. Enamel.....# gro \$1.00
 Bonnell's Liquid Stove Polish.....# gro \$9.00
 Bonnell's Paste Stove Polish.....# gro \$8.00
 Black Eagle Benzine Paste, 5 and 10 lb cans.....12%
 Black Jack Water Paste, 5 and 10 lb cans.....12%
 Nickel Plate Paste.....# gro \$6.00
 Crown Paste, 5 and 10 lb pails.....# 12 @ 12%
 Black Flag.....# gro \$7.20
 Crown Paste, 5 and 10 lb pails.....# 12 @ 12%
 Black Flag, 5 and 10 lb pails.....# 12 @ 12%
 Black Flag, liquid, in bottles, # gro.....\$8.10

Poppers, Corn—
 Round or Square, 1 qt.....# gr \$10.00 @ 10.50
 Round or Square, 1 1/2 qt.....# gr \$15 @ 15.50
 Round or Square, 2 qt.....# gr \$18.50 @ 19.00

Post Hole and Tree Augers and Diggers—See Diggers, Post Hole, &c.

Potato Parers—See Parers, Potato.

Pots.
 Tin.....40%
 Enamel.....40%
 Family, Howe's "Eureka".....40%
 Family, L. F. C.'s "Handy".....50%

Presses.
 Fruit and Jelly.....20%
 Enterprise Mfg. Co.....# dos \$3.50
 Shepard's Queen City.....40%
 Silver & Co.....# dos \$2.75

Pruning Hooks and Shears—See Shears.

Pullers.
 Nail.....# dos \$18.00, 35%
 Curtis Hammer.....# dos \$9.00
 Giant, No. 1.....# dos \$19.00, 10%
 Giant, No. 2.....# dos \$15.00, 10%
 Pelican.....# dos \$9.00, 25%
 Eclipse.....# dos \$18.00, 30%

Pulleys—
 Hot House, Awning, &c.....60%
 Japanned Screw.....60%
 Brass Screw.....60%
 Japanned Slide.....60%
 Japanned Clothes Line.....60%
 Empire Sash Pulley.....55%
 Moore's Sash, Anti-Friction.....50%
 Hay Fork, Solid Eye, #4.00; Swivel, #4.50.....50%
 Hay Fork, "Anti-Friction" 5 in. Solid, \$5.70.....50%
 Hay Fork, "F" Common and Pat. Bushed.....20%
 Hay Fork, Tarbox Pat. Iron.....20%
 Hay Fork, Reed's Self-Lubricating.....50%
 Shade Rack.....45%
 Tackle Blocks.....See Blocks
 Moore's Anti-Friction 5 in. Wheel, # dos \$12.00.....40%

Pumps.
 Clatern, Best Makers.....60%
 Pitcher Spout, Best Makers.....37%
 Pitcher Spout, Cheaper Goods.....70%

Punches—
 Saddlers' or Drive, good, # dos.....60%
 Bemis & Call Co.'s Cast Steel Drive.....50%
 Bemis & Call Co.'s Springfield Socket.....50%
 Spring, good quality.....# dos \$2.50 @ 2.60
 Spring, Leach's Pat.....15%
 Bemis & Call Co.'s Spring and Check.....40%
 Solid Tinner's P. S. & W. Co. # dos \$1.44, 55%
 Tinner's Hot-ow Punches P. S. & W. Co. # dos \$1.44, 55%
 Rice Hand.....15%
 Avery's Revolving.....40%
 Avery's Saw-Set and Punch, See Saw Sets.

Rail—
 Sliding Door, Wrt Brass, # 35.....15%
 Sliding Door, Wrt Iron, # ft. 7.....15%
 Sliding Door, Iron, Painted, # foot 4, 40%
 Barn Door Light In.....# 2 3 10, 10%
 R. D. for N. K. Hangers.....Small, Med. Large.
 For 100 feet.....\$2.15 2.70 3.25.net
 For 100 feet.....\$2.15 2.70 3.25.net
 Victor's Steel Rail, # foot.....40%
 Victor Track Rail, 7 1/2 # foot.....50%
 Carrier Steel Rail, # foot.....40%
 Moore's Wrought Iron.....25%

Rakes—
 Cast Steel, Association goods.....60%
 Cast Steel, outside goods.....60%
 Malleable.....60%
 Gibbs Lawn Rake.....\$12.00, 50%
 Canton Lawn Rake.....\$9.50, 50%
 Ft. Madison Prize Bow Brace and Feet.....50%
 Fort Madison Steel Tooth Lawn Rake, #6.00.....25%

Razors—
 J. R. Torrey Razor Co.....30%
 Wostenholme and Butcher, \$10.00 to 2.....10%
 Jordan's A. A. I, list Nov. 1, 1889.....50%
 Jordan's Old Faithful, list Nov. 1, '89, 50%
 Galvanic.....# dos \$15.50

Razor Straps—See Straps, Razor.

Rings and Ringers.
 Bull Rings.....50%
 Union Nut Co.....50%
 Sargent's.....60%
 Hotchkiss' low list.....30%
 Humason, Beckley & Co.'s.....70%
 Peck, Stow & W. Co.'s.....50%
 Ellrich Hdw. Co., White Metal, low list.....50%

Hog—
 Top of the Hill Ringers.....# dos \$2.00
 Top of the Hill Ringers.....# dos \$1.25
 Hill's Improved Ringers.....# dos \$1.25
 Hill's Old Style Ringers.....# dos \$1.19 1/2
 Hill's Tongue.....# dos \$3.00
 Hill's Ringers.....# dos \$1.00
 Perfect Ringers.....# dos \$2.15 @ 2.25
 Blair's Hog Ringers.....# dos \$2.00
 Blair's Hog Ringers.....# dos \$2.00
 Champion Ringers.....# dos \$2.00
 Champion Ringers, Double.....# dos \$2.25
 Brown's Ringers.....# dos \$2.00
 Brown's Ringers.....# dos \$1.50 @ 1.55
 Electric Hog Ringers.....# dos boxes \$1.50
 Electric Hog Ringers.....# dos \$2.00

Rivets and Bars.
 Iron, list Nov. 17, '87.....40%
 Copper.....50%
 Copper Iron, Bettina Brand.....40%

Rivet Sets—See Sets.

Rods.
 Stair, Brass.....25%
 Stair, Black Walnut.....# dos 40%

Rollers.
 Barn Door, Sargent's list.....60%
 Acme Moore's Anti-Friction.....55%
 Union Barn Door Roller.....70%

Rope.
 Manila, 1/4 in. and larger.....# 10 @ 10%
 Manila, 1/2 in. and larger.....# 10 @ 10%
 Manila, 3/4 in. and larger.....# 10 @ 10%
 Manila, 1/2 in. and larger.....# 10 @ 10%
 Manila, Hay Rope.....# 10 @ 10%
 Sisal.....# 10 @ 10%
 Sisal, 1/4 in. and larger.....# 10 @ 10%
 Sisal, 1/2 in. and larger.....# 10 @ 10%
 Sisal, Hay Rope.....# 10 @ 10%
 Sisal, Tarred Rope.....# 10 @ 10%
 Sisal, Medium Lathe Yarn.....# 10 @ 10%
 New Zealand, 1/2 in. and larger.....# 10 @ 10%
 New Zealand, 3/4 in. and larger.....# 10 @ 10%
 New Zealand, 1/2 in. and larger.....# 10 @ 10%
 New Zealand, Tarred Rope.....# 10 @ 10%
 Note.—Manufacturers' prices on above 1/2% # less, f.o.b. factory.
 Cotton Rope.....# 13 1/4 @ 10%
 Jute Rope.....# 6 1/2 @ 6%
 Wire.....32%
 List May 1, 1889.
 Iron.....32%
 Iron, Galvanized.....40%
 Cast Steel.....40%

Rules.
 Boxwood.....80%
 Starratt's Rule and Strain Edges, Steel.....25%

Sad Irons—See Irons, Sad.

Sand and Emery Paper and Cloth—See Paper and Cloth, Sand and Emery.

Sash Cord—See Cord, Sash.

Sash Locks—See Locks, Sash.

Sash Weights—See Weights, Sash.

Sausage Stuffers or Fillers—See Stuffers or Fillers, Sausage.

Saws.
 Diastion's Circular.....45%
 Diastion's Cross Cuts.....45%
 Diastion's Hand.....20%
 Woodruff & McParlin.....25%
 Hand, Panel and Rip.....25%
 Narrow Champion Cross Cuts with Handles, # foot.....20%
 Champion Thin Back Cross Cuts, # foot.....25%
 Champion Extra Thin Back Cross Cuts, # foot.....31%
 One Man Champion Cross Cuts, # foot.....40%
 Wheeler, Madden & Clemson Mfg. Co. Hand, Panel and Rip.....30%
 Narrow Champion Cross Cuts with Handles, # foot.....20%
 Champion Thin Back Cross Cuts, # foot.....25%
 Champion Extra Thin Back Cross Cuts, # foot.....31%
 One Man Champion Cross Cuts, # foot.....40%

Saw Sets—See Sets, Saw.

Saw Whetstones—See Whetstones, Saw.

Saw Yokes—See Yokes, Saw.

Saw Zips—See Zips, Saw.

Saw Zips—See Zips, Saw.

Saw Zips—See Zips, Saw.

Saw Zips—See Zips, Saw.

Saw Zips—See Zips, Saw.

Saw Zips—See Zips, Saw.

Saw Zips—See Zips, Saw.

Saw Zips—See Zips, Saw.

Saw Zips—See Zips, Saw.

Saw Zips—See Zips, Saw.

Saw Zips—See Zips, Saw.

Saw Zips—See Zips, Saw.

Saw Zips—See Zips, Saw.

Saw Zips—See Zips, Saw.

Saw Zips—See Zips, Saw.

Saw Zips—See Zips, Saw.

Atkins' Circular Shingle and Heading... 50¢
 Atkins' Silver Steel Diamond X Cuts... 70¢
 Atkins' Special Steel Dexter X Cuts... 50¢
 Atkins' Special Steel Diamond X Cuts... 32¢
 Atkins' Champion and Electric Tooth... 30¢
 Atkins' Follow Back X Cuts... 20¢
 Atkins' Muley, Mill and Drag... 40¢
 Atkins' One-Man Saw, with handles... 40¢
 Peace Circular and Mill... 45¢
 Peace Hand Panel and Rip... 25¢
 Peace Cross Cuts... 45¢
 Richardson's Circular and Mill... 45¢
 Richardson's X Cuts... 45¢
 Richardson's Hand, &c... 25¢
 C. E. Jennings & Co., Hand, Panel and Rip... 25¢

Back Saws—
 Griffin's, complete... 40¢ to 50¢
 Griffin's Hack Saw, Blades... 40¢ to 50¢
 Star Hack Saws and Blades... 25¢
 Eureka and Crescent... 35¢

Scroll—
 Lester, complete, \$10.00... 25¢
 Rogers, complete, \$4.00... 25¢
 Barnes' Builders' and Cabinet Makers'... 15¢
 Barnes' Scroll Saw Blades... 35¢

Saw Frames—See Frames, Saw.

Saw Sets—See Sets, Saw.

Saw Tools—See Tools, Saw.

Scales—

Hatch, Counter, No. 171, good quality... 25¢
 Hatch, Tea, No. 161... 25¢
 Union Platform, Plain... 25¢
 Union Platform, Striped... 25¢
 Chatillon's Grocers' Trip Scales... 60¢
 Chatillon's Eureka... 25¢
 Chatillon's Favorite... 40¢
 Family, Turnbills... 30¢ to 40¢
 Richie Bros.' Platform... 40¢

Scale Beams—See Beams, Scale.

Scissors, Fluting— 45¢

Scrapers—

Adjustable Box Scraper (S. R. & L. Co.)... 50¢
 Box, 1 Handle... 30¢ to 40¢
 Box, 2 Handle... 40¢ to 50¢
 Defiance Box and Ship... 20¢ to 40¢
 Foot... 50¢ to 60¢
 Ship, Common... 30¢ to 50¢
 Ship, R. I. Tool Co... 10¢

Screen Window and Door

Frames—See Frames.

Screw Drivers—See Drivers, Screw.

Screws.

Bench and Hand—

Bench, Iron... 55¢ to 100¢
 Bench, Wood, Beech... 25¢ to 30¢
 Bench, Wood, Hickory... 20¢ to 25¢
 Hand, Wood... 25¢ to 30¢
 Lag, Blunt Point, List Jan. 1, 1890... 75¢ to 100¢
 Coach and Lag, Gimlet Point, List Jan. 1, 1890... 75¢ to 100¢
 Bed... 25¢ to 30¢
 Hand Rail, Sargent's... 60¢ to 75¢
 Hand Rail, H. & J. Mfg. Co... 70¢ to 100¢
 Hand Rail, A. M. Screw Co... 75¢
 Jack Screws, Millers Falls List... 50¢ to 60¢
 Jack Screws, P. S. & W... 35¢
 Jack Screws Sargent... 60¢ to 100¢
 Jack Screws Stearns... 40¢ to 100¢

Cork—

Humason & Beckley Mfg. Co. 40¢ to 50¢

Williamson's... 35¢ to 50¢

Hove Bros. & Hulbert... 30¢

Machine—

Flat Head, Iron... 55¢

Round Head, Iron... 50¢

Wood—

List January 1, 1891.

Flat Head Iron... 75¢

Round Head Iron... 67¢

Flat Head Brass... 75¢

Round Head Brass... 65¢

Flat Head Bronze... 75¢

Round Head Bronze... 65¢

Bowers' Drive Screws... 85¢

Scroll Saws—See Saws, Scroll.

Scythes.

Grain... 40¢ to 50¢

Grass... 40¢ to 50¢

Scythe Snaths—See Snaths, Scythe

Sets.

Awl and Tool.

Alken's Sets, Awls and Tools... 55¢ to 100¢

No. 20, \$10.00... 55¢ to 100¢

Fray's Adj. Tool Hds., Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100... 55¢ to 100¢

Miller's Falls Adj. Tool Hds... 25¢

No. 1, \$15; No. 2, \$18... 25¢ to 30¢

Henry's Combination Haft... 25¢

Brad Sets... 25¢ to 30¢

No. 42, \$10.50; No. 43, \$12.50... 25¢ to 30¢

Stanley's Excelsior... 25¢ to 30¢

No. 1, \$7.50; No. 2, \$4.50... 25¢ to 30¢

No. 3, \$5.50... 25¢ to 30¢

Nail—

Square... 40¢ to 50¢

Round... 40¢ to 50¢

Buck Bros... 27¢ to 30¢

Cannon's Diamond Point... 30¢ to 40¢

Rivet.

Regular List... 50¢ to 100¢

Saw—

Stillman's Genuine... 50¢ to 100¢

Stillman's Imita... 50¢ to 100¢

Common Lever... 50¢ to 100¢

Morrill's No. 1... 50¢ to 100¢

Leach's... 50¢ to 100¢

Sh's... 50¢ to 100¢

Hammer, Hotchkiss... 50¢ to 100¢
 Hammer, Bemis & Call Co.'s new Pat... 30¢ to 50¢
 Bemis & Call Co.'s Lever and Spring Hammer... 30¢ to 50¢
 Bemis & Call Co.'s Plate... 10¢
 Bemis & Call Co.'s Cross Cut... 12¢ to 15¢
 Alken's Genuine... 15¢ to 20¢
 Alken's Imitation... 10¢ to 15¢
 Hart's Pat. Lever... 20¢
 Diaston's Star... 25¢
 Leopold... 40¢ to 50¢
 Alken's Lever... 50¢ to 60¢
 Alken's Criterion... 50¢ to 60¢
 Croissant (Keller), No. 1, \$15.00; No. 2, \$24.00... 40¢ to 50¢
 Avery's Saw Set and Punch... 50¢
 Chieftain H. R. Co.'s Superior... 50¢ to 60¢

Sharpeners, Knife.

Parkins.

Applewood Handles... 50¢ to 60¢, 40¢

Rosewood or Cocobolo... 50¢ to 60¢, 40¢

Shaves, Spoke.

Iron... 45¢

Wood... 30¢

Bailey's (Stanley R. & L. Co.)... 40¢ to 100¢

Stearns... 30¢ to 40¢

Cincinnati... 30¢ to 40¢

Goodell's... 25¢

Shears—

American (Cast) Iron... 75¢ to 100¢

Barnard's Lamp Trimmers... 50¢ to 75¢

Tinners... 30¢ to 40¢

Seymour's, List, Dec. 1881... 60¢ to 100¢

Heinrich's, List, Dec. 1881... 60¢ to 100¢

First quality C. S. Trimmers... 80¢ to 100¢

Second quality C. S. Trimmers... 80¢ to 100¢

Acme Cast Shears... 100¢ to 150¢

Diamond Cast Shears... 100¢ to 150¢

Clipper... 100¢ to 150¢

Victor Cast Shears... 75¢ to 100¢

Howe Bros. & Hulbert, Solid Forged Steel... 40¢

Chicago Drop Forge & F. Co., Solid Steel Forged... 60¢

Claude Shear Co., Japaned... 70¢

Claude Shear Co., Nickel-plated, same list... 60¢

Galvanic, 3 1/2 to 9 in, \$1.00, \$1.00 per inch

Pruning Shears and Hooks.

Diaston's Combined Pruning Hook and Saw... 50¢ to 100¢

Diaston's Pruning Hook... 50¢ to 100¢

E. S. Lee & Co.'s Pruning Tools... 40¢

Pruning Shears, Henry's Pat... 35¢ to 40¢

Henry's Pruning Shears... 40¢ to 45¢

Wheeler, M. & C. Co.'s Combination... 50¢ to 100¢

Dunlap's Saw and Chisel... 50¢ to 100¢

J. Mallinson & Co., No. 1, \$5.25; No. 2, 7.25

P. S. & W. Co... 60¢

Tinners, &c.—

Shears and Snips (P. S. & W.)... 30¢ to 25¢

Snips, J. Mallinson & Co... 35¢

Sheaves—

Sliding Door—

M. W. Co., List July, 1888... 50¢ to 100¢

R. E., List Dec. 18, 1885... 55¢ to 20¢

Corbin's List... 60¢ to 100¢

Patent Roller... 60¢ to 100¢

Patent Roller, Hatfield's... 75¢

Russell's Anti-Friction, List Dec. 1885... 60¢ to 25¢

Moore's Anti-Friction... 50¢

Sliding Shutter—

R. E., List Dec. 18, 1885... 60¢ to 100¢

Sargent's list... 60¢ to 100¢

Reading list... 60¢ to 100¢

Ship Tools—

L. & J. White... 20¢ to 55¢

Shoes, Horse, Mule, &c.—

Horse—

Burden's, Perkins', Phoenix and Bryden's Boss, at factory... 44.00

Bryden's Frog Pressure, at factory... 55.00

add \$1 per keg to above prices.

Ox, Wrought—

1000 lb lots... 9¢

500 lb lots... 10¢

Shot—

Drop up 'o BB, 25-lb bag... 1.32

Drop up to BB, 5-lb bag... .35

Drop, BB and larger, 20-lb bag... 1.57

Drop, BB and larger, 5-lb bag... .41

Buck and Chilled, 25-lb bag... 1.62

Buck and Chilled, 5-lb bag... .41

Dust Shot, 25-lb bag... 2.00

Dust Shot, 5-lb bag... .45

Shovels and Spades—

Ames' Shovels, Spades, &c., List Nov. 1, 1885... 20¢

NOTE.—Jobbers frequently give 50¢ to 75¢ extra on above.

Griffith's C. S. Iron... 50¢ to 100¢

Griffith's Solid C. S. R. R. Goods... 20¢

St. Louis Shovel Co... 20¢ to 75¢

Hussey, Binns & Co... 15¢ to 25¢

Hubbard & Co... 20¢ to 75¢

Lehigh Mfg. Co... 50¢ to 100¢

H. M. Myers Co... 30¢

Payne Pettibone & Son... 35¢ to 45¢

Remington's (Lowman's) Pat... 30¢ to 40¢

Rowland's, Black Iron... 50¢ to 100¢

Rowland's Steel... 60¢ to 100¢

Shovels and Tongs—

Iron Head... 60¢ to 100¢

Brass Head... 60¢ to 100¢

Shovels—

Mann's Tin Rim... 50¢ to 25¢

Buffalo Metallic, S. S. & Co... 50¢ to 25¢

Shaker (Barber's Pat.) Flour Sifters... 50¢ to 25¢

Electric... 50¢ to 25¢

Hunter's... 50¢ to 25¢

Smith's Adjustable Sifters... 50¢ to 25¢

Smith's Adjustable Milk Strainer... 50¢ to 25¢

Smith's Adjustable T. & C. Swainer... 50¢ to 25¢

Staves, Wooden Rim—

Meesh 18, Nested, 50¢ to 1.00

Meesh 20, Nested, 50¢ to 1.10

Meesh 24, Nested, 50¢ to 1.15

Skells, Thimble—

Western list... 75¢ to 100¢

Columbus Wrt. Steel, Special net prices... 60¢

Coldbrookdale Iron Co... 60¢

Seneca Falls Pattern... 60¢

Utica P. S. T. Skells... 60¢

Utica Turned and Fitted... 35¢

Slates—

School, by case... 50¢ to 100¢

Snaps, Harness, &c.—

Anchor (T. & S. Mfg. Co.)... 65¢

Fitch's (Bristol)... 50¢ to 100¢

Hotchkiss... 10¢

Andrews... 50¢

Sargent's Patent Guarded... 70¢ to 100¢

German, new list... 40¢ to 100¢

Cover, new list... 50¢ to 25¢

Cover, New R. E... 50¢ to 25¢

Covered Spring... 60¢ to 100¢

Snaths, Scythes.

List... 50¢ to 100¢

Soldering Irons—See Irons, Soldering.

Spittoons, Cuspidors, &c.

Standard Fiberglass—

Cuspidors, 8 1/2-inch, 50¢ to 1.00

No. 5, 50¢

Spittoons, Dalsey, 8-inch, No. 1, \$4; 10 and 11 inch, \$6.

Spoke Shaves—See Shaves, Spoke.

Spoke Trimmers—See Trimmers, Spoke.

Spoons and Forks—

Tinned Iron—

Basting, Cen. Stamp. Co's list... 70¢ to 100¢

Solid Table and Tea, Cen. Stamp. Co's list... 70¢ to 100¢

Buffalo S. S. & Co... 35¢ to 42¢

Silver-Plated—(4 mos. or 5¢ cash 30 days)

Meriden Brit. Co., Rogers... 40¢ to 15¢

C. Rogers & Bros... 40

Wire Brads & Nails, see Nails, Wire.
Steel-Wire Brads, R. & E. Mfg. Co.'s
List.....50&10%

Tapes, Measuring—
American.....40&10&5%
Spring.....40%
Chesterman's, Regular list.....35&30%

Thermometers—
Tin Case.....80&80&10%

Thimble Skeins—See Skeins.

Ties, Bale—Steel

Standard Wire, list.....50&10&5%

Tinners' Shears, &c.—See Shears,
Tinners', &c.

Tinware—
Stamped, Japanned and Pieced, list
Jan. 20 1887.....70&10&70&10&5%

Tire Benders, Upsetters, &c—
See Benders and Upsetters, Tire.

Tools.

Coopers'—

Bradley's.....20%
Barton's.....30&30&5%
L. & J. White.....30&5%
Albertson Mfg. Co.....25%
Beatty's.....30%
Sandusky Tool Co.....30&30&5%
Rhaves, Cincinnati Tool Co.....20%
Lumber.

Ring Peavies, "Blue Line".....\$ doa \$20.00

Ring Peavies, Common.....\$ doa \$18.00

Steel Socket Peavies.....\$ doa \$21.00

Mail Iron Socket Peavies.....\$ doa \$19.00

Cant Hooks, "Blue Line".....\$ doa \$16.00

Cant Hooks, Common Finish.....\$ doa \$14.00

Cant Hooks, Mail Socket Clasp, "Blue
Line" Finish.....\$ doa \$16.00

Cant Hooks, Mail Socket Clasp, Com-
mon Finish.....\$ doa \$14.50

Cant Hooks, Clip Clasp, "Blue Line"
Finish.....\$ doa \$14.00

Cant Hooks, Clip Clasp, Common Fin-
ish.....\$ doa \$12.00

Hand Spikes.....\$ doa 6 ft., \$15.00; 8 ft.,
\$20.00

Pike Poles, Pike & Hook, \$ doa, 12 ft.,
\$11.50; 14 ft., \$12.50; 16 ft., \$14.50;

18 ft., \$17.50; 20 ft., \$21.00

Pike Poles, Pike only, \$ doa, 12 ft.,
\$10.00; 14 ft., \$11.00; 16 ft., \$13.00; 18
ft., \$16.00; 20 ft., \$20.00.

Pike Poles, not ironed, \$ doa, 12 ft.,
\$8.00; 14 ft., \$9.00; 16 ft., \$10.00; 18
ft., \$12.00; 20 ft., \$16.00.

Setting Poles, \$ doa, 12 ft., \$14.00; 14
ft., \$15.00; 16 ft., \$17.00

Swamp Hooks.....\$ doa \$18.00

Saw.

Atkins' Perfection.....\$ doa \$12.00

Atkins' Excelsior.....\$ doa \$6.00

Atkins' Giant.....\$ doa \$4.00

Tobacco Cutters—See Cutters, To-
bacco.

Transom Lifters—See Lifters,
Transom.

Traps—

Game—

Newhouse.....40&40&5%

Oneida Pattern.....70&10%

Game, Blake's Patent.....40&10&5%

Mouse and Rat—

Mouse Wood Choker, \$ doa holes, 11&12%

Mouse, Round Wire.....\$ doa \$1.50, 10%

Mouse, Cage, Wire.....\$ doa \$2.50, 10%

Mouse, Catch-em-alive.....\$ doa \$2.50, 15%

Mouse, Bonanza.....\$ doa \$0.90&\$1.00

Rat, Decoy.....\$ gr \$10.00, 10%

Ideal.....\$ gr \$10.00

Cyclone.....\$ gr \$5.35

Hotchkiss Metallic Mouse, 5-hole traps,
\$ doa, 90¢; in full cases, \$ doa.....75¢

Hotchkiss Imp. Rat Killer.....\$ gro \$18.50

Hotchkiss New Rat Killer.....\$ gro \$16.50

Schuyler's Rat Killer.....\$ gro \$15.00

Triers—

Butter and cheese.....35%

Trimmers, Spoke.

Bonney's.....\$ doa \$10.00, 50%

Stearns.....\$ doa \$10.00, 50&10%

Ives', No. 1, \$15.00; No. 2, \$12.00, \$ doa.

Douglas.....\$ doa \$9.00, 20%

Cincinnati.....35%

Trowels—

Lothrop's Brick and Plastering.....20&10&5&35%

Reed's Brick and Plastering.....15%

Dianon's Brick and Plastering.....25%

Peace's Plastering.....25%

Clement & Maynard's.....20%

Rose's Brick.....15&20%

Brade's Brick.....25%

Worrall's Brick and Plastering.....20%

Garden.....70%

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list, '82.....40%

Tubes, Boiler—

See Pipe.

Twine—

Flax Twine.....BC. B.

No. 0, 1/4 and 1/2 B Balls.....23¢ 34¢

No. 12, 1/4 and 1/2 B Balls.....23¢ 34¢

No. 18, 1/4 and 1/2 B Balls.....23¢ 34¢

No. 24, 1/4 and 1/2 B Balls.....23¢ 34¢

No. 30, 1/4 and 1/2 B Balls.....23¢ 34¢

No. 36, 1/4 and 1/2 B Balls.....23¢ 34¢

No. 42, 1/4 and 1/2 B Balls.....23¢ 34¢

Chalk Line, Cotton, 1/4 B Balls.....23¢ 34¢

2-Ply Hemp, 1/4 and 1/2 B Balls (Spring
Twine).....15¢

3-Ply Hemp, 1/4 B Balls.....15¢

3-Ply Hemp, 1/2 B Balls.....15¢

Cotton Wrapping, 5 Balls to a.....15¢

2, 3, 4 and 5-Ply Jute, 1/4 B Balls.....15¢

Wool.....6¢

Paper.....13¢

Cotton Mops, 6, 9, 12 and 15 B to doa.....18¢

Vices—

Solid Box.....50&10&50&10&5%

Parallel—

Fisher & Norris Double Screw.....15&10%

Stephens.....25&30%

Parker's.....20&25%

Wilson's.....55%

Howard's.....40%

Bonney's.....40&10%

Millers Falls.....40&40&10%

Trenton.....40&50&40&10%

Herrill's.....15&20%

Backus and Union.....60&10&10%

Double Screw Leg.....15&10%

Prentiss.....20&25%

Simpson's Adjustable.....40%

Moore's.....20%

Massoy Quick Action.....20 & 25 %

Saw Millers—

Bonney's, Nos. 2 & 3, \$15.00.....40&10%

Stearns.....35&10&35&10&10%

Stearns' Silent Saw Vices.....35&35%

Sargent's.....60&10%

Hopkins.....\$ doa \$17.50, 10%

Reading.....40&10%

Wentworth.....20&10%

Combination Hand Vices.....\$ gr \$42.00

Cowell Hand Vices.....30%

Bauer's Pipe Vices.....10%

Cincinnati.....25&10%

Enterprise Pipe Vices, each.....\$3.00

Massoy Combination Pipe.....40%

Wagon Boxes—See Boxes, Wagon.

Washer Cutters—See Cutters
Washer.

Wagon Jacks—See Jacks, Wagon.

Ware, Hollow, Enameled, &c.

Cast Iron, Hollow—

Stove Hollow-Ware.....60&10%

Ground.....60&10%

Unground.....60&10&10%

White Enameled-Ware—

Maillin Kettles.....70%

Boilers and Saucepans.....40&10&50&5%

Tinned Boilers and S'pans.....40&10&50&5%

Rustless Hollow-Ware.....60&50&5%

Gray Enameled-Ware.....60%

Stove.....60%

Maillin Kettles.....60&10&10%

Boilers and Saucepans.....40&5%

Enameled—

Agate and Granite Ware, list Jan. 1,
1889.....35&10%

Ironclad Enameled Ware.....dis 35&10%

Kettles—

Galvanized Tea-Kettles—

Inch.....7 8 9

Each.....55¢ 60¢ 75¢

Standard Fiber—

Wash-Basins, 10 1/2 in.....Plain, Dec'd \$2.00 \$2.25

Wash-Basins, 12 in.....2.25 2.75

Keelers, 11 1/4 in.....4.00

Cuspidors.....8.00

Spittoons, Daisy, 7 1/2 in.....4.00

Spittoons.....4.00

Half-peck Measures.....3.50

See also Pails.

Indurated Fiber—25¢

Spittoons, No. 2, \$ doa.....\$9.00

Basins, Ringed, \$ doa, No. 2, \$4.80;

No. 3.....\$4.30

Wash-tubs, Nested, Nos. 0, 1, 2 and 3 (4
pieces), \$ nest.....\$7.50

Keelers, Nested, Nos. 1, 2, 3 and 4 (4
pieces), \$ nest.....\$7.50

Butter Bowls, 15, 17 and 19-Inch (3
pieces), \$ nest.....\$2.25

Liquid Measures, pt., qt., 2 qt. and fun-
nel (4 pieces), \$ set.....\$3.00

Dry Measures, 1, 2, 4, 8 and 16 qts. (5
pieces), \$ set.....\$3.00

See also Pails.

Silver Plated, Hollow—

4 mo. or 5 1/2 cash in 30 days.

Reed & Barton.....40&5%

Meriden Britannia Co.....40&5%

Simpson, Hall, Miller & Co.....40&5%

Rogers & Brother.....40&5%

Hardford Silver Plate Co.....40&5%

William Rogers Mfg. Co.....40&5%

Washers—

Stachole.....5-16 1/4 1/2 3/4 to 1 1/2

Washers.....6 5 3.50 3

In lots less than 200 B, \$ B, add 1/4¢, 5-B
boxes 1¢ to list.

Wedges—

Iron.....\$ B 8 1/4

Steel.....\$ B 8 1/4

Weights, Sash—

Solid Eyes.....\$ ton \$18&\$19

Well Buckets, Galvanized—See
Buckets, Well, Galvanized.

Wheels, Well.

8 in., \$2.25; 10 in., \$2.70; 12 in., \$3.55

Wire and Wire Goods—
Iron—

Market.

Br. & Ann., Nos. 0 to 18.....77 1/2%

Cop'd, Nos. 0 to 18.....75%

Galv., Nos. 0 to 18.....87 1/2%

Tin'd, Tinned list Nos. 0 to 18.....87 1/2%

Stone.

Br. and Ann'd, Nos. 16 to 18.....77 1/2%

Bright and Ann'd, Nos. 19 to 30.....80%

Br. and Ann'd, Nos. 27 to 30.....82 1/2%

Tinned.

Tinned Broom Wire, 18 to 21, \$ B.....5¢

Galvanized Fence, Nos. 8 and 9.....70%

Annealed Fence, Nos. 8 and 9.....80%

Annealed Grade, Nos. 10 to 14.....45%

Brass, list Jan. 18, 1881.....30%

Copper, list Jan. 18, 1881.....35%

Barb Fence.....See Trade Report

Annealed Wire on Spools.....6¢

Maillin's Steel and Tin'd on Spools.....4¢

Maillin's Brass and Cop. on Spools.....4¢

Tate's Spooled, Tinned and Annealed.....5¢

Tate's Spooled Cop. and Brass.....45%

Cast Steel Wire.....\$.00 to 2.3¢

Stub's Steel Wire.....\$.00 to 2.3¢

Steel Music Wire, 13 to 30.....60&70¢

Wire Clothes Lines, see Lines.

Wire Picture Cord, see cord.

Bright Wire Goods—

Standard list.....80&10%

Wire Cloth and Netting.

Painted Screen Cloth, good quality,
\$ 100 sq. ft., \$1.40

Galvanized Wire Netting.....70&10&75%

Wire Rope—See Rope, Wire.

Wrenches—

American Adjustable.....40%

Baxter's Adjustable "S".....40&10&50%

Baxter's Diagonal.....40&10&50%

Coe's Genuine.....50&2%

Coe's "Mechanics".....60&10&25%

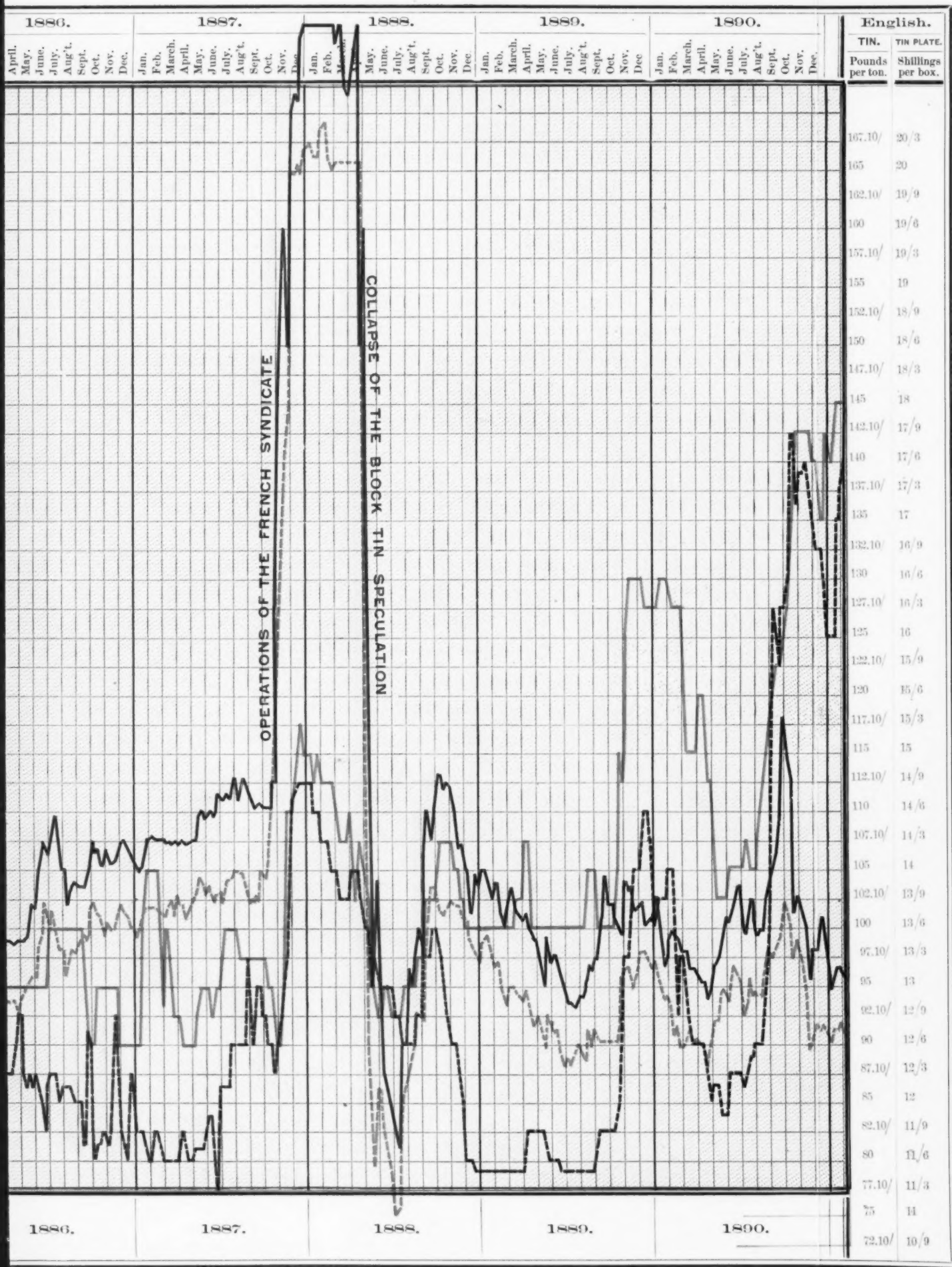
Girard Standard.....65&10%

Lamson & Sessions' Engineers'.....60&10%

Lamson & Sessions' Standard.....70&10%



PRICES OF
TIN AT NEW YORK (Full Blue Line). TIN PLATE AT
 AND
TIN AT LONDON (Dotted Red Line). TIN PLATE AT
 Compiled from the Market Reports of *The*



PRICES OF
TIN PLATE AT NEW YORK (Dotted Blue Line).
AND
TIN PLATE AT LIVERPOOL (Full Red Line).
Market Reports of *The Iron Age*.

